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# Psychological Bulletin

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## TIME SAMPLING IN STUDIES OF SOCIAL BEHAVIOR: A CRITICAL REVIEW OF TECHNIQUES AND RESULTS WITH RESEARCH SUGGESTIONS

BY RUTH E. ARRINGTON  
*American Statistical Association*

### I. INTRODUCTION

This survey<sup>1</sup> of recent research in the field of social behavior is focused upon the knowledge thus far acquired and potentially acquirable by a particular method. Its immediate purpose is to appraise the contribution of the recently developed technique of controlled observation known as *time sampling* to the advancement of scientific knowledge in the field of social development. Its more general aim is to show, by means of a critical analysis of the results of a selected group of time-sampling and related studies, the extent to which, and some of the ways in which, scientific observation of social interaction, as it normally occurs in life situations or in experimentally controlled environments planned to simulate life conditions, has contributed and can contribute further to understanding of the process of social development and the patterning of social behavior in the individual.

The general thesis motivating the selection of this narrowly delimited area as a base for research planning may be briefly summarized as follows: (1) A considerable number of problems relative to social development, interpersonal relations, and the etiology of social behavior patterns depend for their satisfactory solution upon direct observation of the process of social interaction. (2) The ultimate objective of scientific observation in these areas is the demonstration of general relationships which hold true for all individuals differentiated in specified ways and ob-

<sup>1</sup> This paper was prepared with financial aid from the Social Science Research Council.

served under specified conditions and a knowledge of which will contribute to the better understanding and control of human behavior. (3) The discovery and proof of such relationships can be accomplished only with the aid of reliable measures of the actual incidence of particular modes of behavior under particular conditions. (4) The researches to which attention is here directed represent significant beginnings in the direction of scientific measurement in one small segment of the social field.

#### *Definition of Time Sampling*

Time sampling, as here discussed, is a method of observing the behavior of individuals or groups under the ordinary conditions of everyday life in which observations are made in a series of short time periods so distributed as to afford a representative sampling of the behavior under observation. It is, in other words, a method of sampling, the validity of which is primarily a function of the amount and distribution of the time spent in observation or of the number, length, and distribution of the separate observations or *time samples*. As contrasted with the experimental method, it is a form of controlled observation in which the observer, the method of recording, and the manner of selecting the behavior to be observed are subject to control rather than the situation in which observations are made. Finally, it is a method whose essential function is accurate measurement of the incidence of specific behavior acts or patterns under specified conditions.

#### *Origin and Development of Time Sampling*

Thus defined, time sampling is a development of the past 15 years and has been chiefly restricted to studies of the normal patterning of social behavior and language in the young child. Under the impetus of the child development research movement sponsored by the National Research Council during the years 1920-1935, interest in the scientific study of early social development had been stimulated, groups of children between the ages of two and five years had become readily accessible to systematic observation under the exceptionally favorable conditions afforded by the university-affiliated nursery schools, and extensive programs of observational research had been undertaken. In the course of these efforts to observe normal child behavior on a more comprehensive scale than had hitherto been possible, the need for more reliable and more readily comparable measures of behavior frequency than could be derived from records of the traditional diary

type became apparent to careful workers in the field, and a process of experimentation began which culminated in the development of the various techniques of controlled observation herein examined.

Diary records, when analyzed for exact information as to the normal frequency of particular modes of behavior under given conditions, had yielded data of doubtful reliability because of the inevitable incompleteness and inconsistency of the sampling of particular items and the slow and cumbersome nature of the recording process. These data were also not comparable because the selection of the events to be recorded was dependent on the judgment of the individual observer and because the transcription of these events was in purely qualitative terms which varied with different observers and with the same observer at different times. As a medium for the accumulation of valid information concerning the incidence and patterning of any given behavior in many different individuals or groups, therefore, the diary record was distinctly unsatisfactory.

With a view to increasing the reliability and comparability of behavior records, various types of control were introduced in the studies here under review. Most important of these changes, from the standpoint of the present discussion, were the translation of observed events into readily comparable quantitative terms through the use of time as a common denominator and the systematic rotation of observations to reduce the effect of uncontrolled variables in the situation. By equating the number and length of observations for all individuals or groups to be compared, a legitimate basis for the comparison of measures of behavior frequency was obtained. By the systematic distribution of the observations over a period of time, a more representative sampling of behavior was assured. Other controls, designed to facilitate the recording process and to insure consistent recording of the same events by different observers, included the substitution of prepared record blanks and code symbols for longhand description, the limitation of the number of behavior items or categories included in the record to that which could be reliably recorded at one time by one person, and the definition of the behavior to be observed in precise objective terms.

The major contributions to the development of time sampling as a measuring instrument were made by Olson, Goodenough, and Parten at the University of Minnesota and by D. S. Thomas and her associates at Columbia University and at the Yale Institute of Human Relations. The Minnesota studies reflect the influence of the test-and-measurement trend in contemporary psychological research and were concerned with the de-

velopment of reliable and immediately useful behavior indices. At Columbia, the evolution of time-sampling techniques was a more gradual process and had its origin in dissatisfaction with the diary record as a means of deriving social behavior data suitable for statistical analysis. Emphasis in the research program directed by Thomas, first at Columbia and subsequently at Yale, was, therefore, on standardization of the observer as a measuring instrument through the control of known sources of observational and recording error, and on the breaking down of the total complex of social behavior into quantitatively similar behavior units which could be objectively defined and reliably recorded (68; 69, pp. 3-7).

The term "time sampling" was first applied to a technique devised by Olson (53, Foreword) for measuring the incidence of readily observable and precisely defined behavior acts in populations of public school children. The procedure was adapted for use in classrooms with fixed seating arrangements and was extremely simple: an entire classroom group was observed from a suitable vantage point, a tally being made in the appropriate square on a seating chart for each individual manifesting the behavior under investigation at least once in each of a series of five-minute observations taken consecutively on the same day. The summary measure of behavior frequency was the total number of five-minute intervals in which the individual displayed the behavior.

Parten (58) used a modification of this method in a study of the social participation and leadership of young children during periods of free play in the nursery school. Her method differed from that of Olson in the following important respects: the length of the time sample was shortened to one minute; only one child was observed at a time; the series of observations for each individual was distributed over a period of months rather than concentrated in a single day; and observations of the different members of the group were systematically rotated in such a way as to insure a representative sampling of each child's usual behavior. Further differences were that the record involved a classification of the child's behavior as observed into broad categories of social participation and leadership rather than a simple notation of the occurrence of specific behavior acts, and that the individual measures were composite weighted scores based on the frequencies in the combined categories rather than simple frequency counts.

In a further development of this technique, subsequently used under more rigidly controlled conditions by graduate students working under Goodenough's direction (23), a more detailed scheme of classification was used to differentiate varying degrees of the several aspects of behavior observed, and symbols representing the appropriate category were recorded at 15-second intervals rather than merely once for each one-minute observation period.

Of the Columbia techniques, the most significant from the standpoint of their contribution to the development of the method were those of Beaver (8), Loomis (41), and Arrington (5). These resemble the Parten and Goodenough methods in general procedure; the Olson method, in that they were concerned with measurement of the frequency of specific behavior acts rather than with the classification of behavior acts into broad

categories. They differ from the Olson technique, however, in that they were designed to give a complete record, in chronological sequence, of *all occurrences* of the focal behavior, rather than one merely of occurrence or nonoccurrence of the behavior, within the observation period. The Arrington technique differed from the others mentioned in that the time sample was subdivided into short time units representing the closest approximation possible, within the limits of accurate recording, to the average duration of separate instances of the behaviors observed. This time scale dividing the five-minute observation into five-second intervals was adopted as a means of insuring consistent measurement of the frequency of social contacts and language, after experience had demonstrated the difficulty of differentiating separate instances of these behaviors and the impossibility of accurate timing of the discrete items in terms of duration. By assigning a weight of five seconds to each occurrence of social contact or language, the behavior units were arbitrarily made comparable. In summarizing the frequency of the behavior observed, Loomis used the total number of occurrences recorded in the combined time samples; Beaver, the average number of occurrences per time sample; and Arrington, the average number of five-second intervals per time sample in which the behavior occurred.

The majority of the time-sampling techniques embraced by the present discussion conform to the general pattern common to all but the first of the above-mentioned methods—that is, they are of the “short-time sample” or “repeated short samples” type in which the individual members of a selected group are observed in rotation at repeated intervals over a period of days, weeks, or months, each individual being observed for a specified number of short time periods of uniform length and the total number of observations or *time samples* per individual being regularly distributed over the entire observation period. Exceptions to this pattern include applications of Olson's technique in original (54) or modified (30, 56, 77, 78, 79) form and techniques used in the study of friendships (15) and activity groupings (52). In a few studies concerned with sampling behavior at a particular stage of development, the time samples have been concentrated within a relatively brief period rather than distributed over a longer time (1, 21, 22, 42).

It is clear, from this brief review of time-sampling methods, that there has been little uniformity with respect to details of procedure in these researches. Some investigators have observed only certain aspects of social behavior, carefully defining each behavior to be observed in advance; others have recorded, without previous definition, all behavior which might, in subsequent analysis of the data, contribute to a better understanding of the particular aspect under investigation. Some have recorded in code; others, in long-hand. Some have been concerned with the frequency of particular behavior acts; others, with the classification of such acts into broad categories. In some studies, the immediate focus of observation has been an individual; in others, a group of individuals. The

length of the time sample has varied from three seconds to three hours in different investigations, depending on the type of behavior sampled and the purpose of the sampling, and the number of samples on which individual and group measures have been based has been equally varied. The time samples have, in some cases, been distributed over a period of months; in others, concentrated within as brief a period as a single day or week. Some investigators have measured merely the occurrence or nonoccurrence of the behavior under observation within the time sample; others, frequency of occurrence within the sample. Individual and group measures, in some instances, represent the average frequency of the behavior per time sample; in others, the total frequency in the combined samples. Some of these measures have been simple frequency counts; others, weighted scores; still others, percentages or ratios.

#### *Research Included in Focal Area*

The focal area of this inquiry has been defined to include studies involving *scientific* observation of social behavior under conditions conducive to natural social interaction and undertaken with a view to generalization concerning some aspect of the *normal* behavior of individuals or groups or to the development of methods which would ultimately contribute to such generalization. The general criterion of scientific observation in studies of this sort is the degree of control exercised over the conditions of observation in the interest of accurate recording and representative sampling of the behavior concerning which conclusions are drawn. Since no clear-cut differentiation could be made between time-sampling and non-time-sampling studies on the basis of amount and type of control over the conditions of observation, a peripheral group of observational and experimental studies not involving time sampling as defined above has been included. The specific criteria determining the selection of these, as well as the time-sampling, researches were (a) that the behavior under investigation should have been systematically sampled under comparable conditions in at least five individuals or in several groups, (b) that a record of the behavior should have been made at the time of observation or immediately thereafter by a nonparticipant observer and in a form capable of yielding quantitative measures of the incidence of the behavior under the conditions of observation, and (c) that some attention should have been paid to problems of reliability or sampling.

The majority of the projects selected on this basis are life-situation studies employing some form of time sampling. A few are life-situation investigations involving other observational techniques but related in content to the time-sampling group. The rest are experimental studies dealing with the same or related problems in which particular aspects of the undirected social interaction of individuals, grouped in pairs, or slightly larger groups, have been observed in a series of time intervals of uniform length in a prearranged situation so planned as to resemble a familiar life environment.

The time-sampling studies have been predominantly concerned with the spontaneous social reactions of nursery school, kindergarten, or first-grade children during informal play or work periods. A considerable number deal with general patterns of social behavior, with frequency and type of social contacts (6, 8, 10, 11, 42, 61, 75), social participation (58), social adjustment (34), growth as manifested in play activities (44), interrelations among different aspects of behavior (5, 7, 12, 19, 23, 31), and the effect on social behavior of specific factors in the material environment (36). Others are concerned with the intensive analysis of specific social patterns: physical contact (41), conflict (35), resistance (13), aggression (22), friendship (15), friendships and quarrels (26), companionship (28), and coöperative and competitive behavior (25). Still others deal with patterns of language frequency or content (1, 21, 55, 64). One is concerned with the constancy of social and other patterns of behavior (33); two, with methodological problems (56, 63). Applications of time sampling in studies of the social behavior of older children and adults have been infrequent and are of interest mainly from a methodological standpoint. They have been focused on a variety of problems: methods of measuring group adjustment (52), the social behavior of adult industrial workers (70, Chap. IV), the verbal responses of junior high school pupils during classroom discussions (30), the incidence of whispering in public school classrooms (54), pupil participation in coöperative group planning and discussion (77, 78), teacher conduct of class discussion (79), and dominative and socially integrative behavior in teachers' contacts with children (4).

Related life-situation investigations which have been considered relevant to the focal problem include studies of companionship (73) and spontaneous group formation (16; 69, Chap. IV), quarreling (18), and sympathy (51), among preschool and older children, which involved a sampling of situations or incidents of a particular sort rather than a sampling in terms of time; studies of language at the preschool level (24, 47), in which the individual sample was a series of 50 consecutive remarks rather than a time sample; and five studies of language at the adult level, four of which (14, 38, 50, 67) deal with sex differences, the fifth (29) with "egocentricity," in spontaneous conversation.

Of the experimental studies, five deal with general patterns of social reaction: two with the responses of very young children to each other and

to materials (46, 66); three, with the social behavior of nursery school children (37, 49, 71). Others deal with specific patterns of social reaction: ascendant behavior (32, 57), rivalry (39), coöperation (9), and dominative and integrative patterns (2, 3). Of the three experimental studies dealing with older children which are indirectly pertinent to the present discussion, one was concerned with the consistency of dominant and submissive behavior in adolescent boys (65); another, with leadership as measured by participation in group story telling (17); the third, with the effect on the social behavior of fifth- and sixth-grade children of "democratic and authoritarian group atmospheres" (40).

### *Organization of Report*

The report is divided into two sections, one dealing with the methodological contribution of the selected group of related researches, the other, with their contribution to knowledge of social behavior. Section II summarizes present knowledge of time sampling and related techniques of controlled observation, suggests methodological problems upon which research is needed, and indicates ways of increasing the effectiveness of studies of the type herein examined. Section III lists the findings relative to social behavior that have been substantially or partially confirmed by controlled observation of normal social interaction and suggests leads for further observational studies of social behavior.

## II. METHODOLOGICAL FINDINGS AND RESEARCH SUGGESTIONS

The time-sampling and related studies reviewed in this paper represent for the most part spade work in a virgin field. Viewed from the standpoint of their contribution to knowledge of method, they have served to define more clearly the role of controlled observation in the systematic study of social behavior, to demonstrate the advantages and defects of various methods of recording and sampling behavior in real life, or life-like, situations, and to explore the possibilities of various statistical measures of reliability and validity. As the result of some 15 years of experimentation with time-sampling and similar techniques, we have a clearer understanding of the extent to which human observers can be introduced into life situations without seriously affecting the "normality" of the behavior observed, of the type and range of situations in which controlled observation of social interaction is feasible, of the factors affecting, and methods of measuring, reliability and validity in observational studies, of the factors to be taken into account in determining the length of the time sample and the number of samples needed to give representative measures,

and of the uses and limitations of time sampling as a method of studying social behavior.

The methodological gains accruing from these researches will be briefly summarized, therefore, in terms of present knowledge relative to (a) the feasibility of systematic observation of social behavior under life conditions, (b) the reliability of observations of human behavior made under the ordinary conditions of everyday life, (c) the validity of behavior indices derived by time-sampling and related techniques, (d) factors affecting the determination of sampling procedure, and (e) the role of time sampling in the scientific study of social development.

#### *Feasibility of Systematic Observation of Social Interaction in Life Situations*

The major deterrents to widespread use of observational methods in studies of social development are (a) the fact that human beings know when they are being observed and are likely to adapt their behavior, consciously or otherwise, to this knowledge, and (b) the relatively limited range of life situations in which the same individuals can be observed over a sufficiently extended period and under sufficiently comparable conditions to insure an adequate sampling of their normal behavior.

With respect to the first of these problems, extensive observation of groups of preschool children has demonstrated that observer-consciousness is a negligible factor at the early age levels, provided observations are made with reasonable regularity and observers consistently refrain from participation in the activities of the individuals observed. The presence of observers has no appreciable effect upon the behavior of the preschool child for the reason that he has not yet learned to attach any particular meaning to such observational paraphernalia as stop watches, record blanks, and the like and is comparatively free from the culture-imposed inhibitions that tend to reduce spontaneity of action in older children and adults.

The results of limited experience in the systematic observation of older subjects in uncontrolled life situations suggest that, for effective use of techniques of controlled observation at higher age levels, it is usually necessary to secure rapport with the subjects in advance or to conceal from them either the fact that observations are being made or the exact nature of the observations.

The findings of Newstetter and his associates (52, p. 69) with respect to the direct observation of boys aged 10 to 15 years during periods of

undirected activity at a summer camp, of Lippitt (40, pp. 66-67) in observations of fifth- and sixth-grade children during informal club activity, and of Dudycha (20, pp. 9-10) in a study of the punctuality of college students in various situations indicate that older children and adults also become negatively adapted to the presence of observers when their initial curiosity is adequately satisfied by a frank explanation of the purpose (actual or plausible) of the observations. Loomis (70, pp. 82-83), Whitehead (76, pp. 383-384), and Roethlisberger and Dickson (62, pp. 387-390), in extensive observations of adult industrial workers, were confronted with a more difficult problem in securing the cooperation of their subjects and found that there were definite limits beyond which such cooperation could not be forced.

We know, in general, that observer-consciousness is a function not only of the age and degree of sophistication of the observee but also of a variety of other factors, such as his familiarity with the observer and with observers in general, his previous experience in being observed, the type of situation in which observations are made, the number of individuals observed in the particular situation, and the frequency with which observations are rotated among the different members of the observed group. The presence of observers will, obviously, be least disturbing in informal situations in which freedom of movement is unrestricted, in situations in which visitors are a common occurrence and when the observer's attention is frequently shifted from one individual to another.

Of the several methods so far developed for observing the normal behavior of human beings without their knowledge, the "participant observer" technique, employed to an increasing extent in recent sociological and anthropological researches, has been excluded by definition for the reason that it does not permit of the taking of records at the time of observation and is therefore inapplicable to problems requiring accurate measurement of the incidence of particular modes of behavior. The device of concealing the observer behind a one-way screen has been successfully used in experimental studies at the nursery and kindergarten levels, and the development of one-way vision glass has greatly facilitated observational studies of certain types of behavior in individuals or small groups in controlled situations. The eavesdropping method yields results of dubious reliability and is obviously inapplicable to most problems in the field of social development. Schuler's method (65) of diverting the attention of the subjects from the main objective of the observations might well be explored further as a laboratory technique. In life-situation studies concerned solely with problems of measurement, the substitution of inconspicuous automatic timing and recording devices for conspicuous stop watches and record blanks offers a solution of the problem which promises to become increasingly important with the further development of quantitative observational techniques. Instruments of this sort have been developed for use in the systematic observation of the behavior of museum visitors (48, p. 88, Note 7).

As to the type of situation in which systematic observation of social behavior is feasible, we know that informal play or work periods in the nursery and public schools and periods of undirected activity in summer camps are particularly favorable environments in which to observe the normal social behavior of children, and that certain types of social behavior can be satisfactorily observed in the ordinary school classroom and during recess periods and other informal situations of relatively brief duration in the public schools. More extensive use might well be made of informal group situations in orphanages, foundling hospitals, day nurseries, WPA nursery schools, and other child-care institutions and of organized play and recreation groups at the preschool and higher age levels. Generally speaking, the basic requirements for a satisfactory life-situation laboratory for the systematic study of problems in social development are that the situation shall afford a relatively constant opportunity for free social interaction, that it shall be one with which the subjects are familiar, that it shall be of approximately uniform duration from day to day and that the personnel of the groups involved shall remain relatively constant during the observation period. The range of situations meeting these requirements and the type of situation best suited to the study of particular aspects of behavior will have to be determined by further experience.

#### *Reliability of Observation*

The accepted criterion of reliability of observation in studies of the sort herein discussed is agreement of independent observers of the same events. Tests of observer agreement have been reported in most of the time-sampling, and in a few of the related life-situation and experimental, studies but the amount of data on which the tests have been based and the number of pairs of observers tested have varied considerably in different investigations. Some of these tests have been extremely thorough; others, more or less perfunctory. The usual procedure has been to check the reliability of the records of the investigator or main observer at the beginning of the investigation by comparison with records taken simultaneously by one other person. Observer agreement has been measured, generally speaking, in two ways: by correlating the total scores obtained by the paired observers in successive observation periods and by computing percentages of agreement on the basis of an item-by-item comparison of the records.

Extensive experience in observing human behavior under real-

life conditions and in testing the reliability of these observations by the criterion of observer consensus has amply confirmed the need for specific tests of the accuracy of behavior records in studies purporting to yield data of scientific value. The mere statement that the investigator has had a great deal of practice in observing or was intimately acquainted with the subjects of observation can no longer be accepted as adequate assurance of the dependability of the information reported. Furthermore, no amount of subsequent statistical manipulation of the data can take the place of basic evidence as to the accuracy of the original records.

With respect to the factors affecting accuracy of observation in uncontrolled life situations, experience has shown that the most important are the amount of behavior observed, the degree of precision with which the observed behavior is defined, and the simplicity or complexity of the method of recording. Other things being equal, the fewer the behavior items or categories included in the record, the more precise the definition of these items, and the simpler the recording process, the more reliable will be the observations.

Observer consensus, although the only feasible test of reliability in life situations, is not a wholly satisfactory criterion for the reason that it is a relative, rather than an absolute, measure which does not differentiate the good from the poor observer. Motion-picture records have been used by D. S. Thomas and her associates as an absolute check on observer reliability, but are expensive and impractical except as a laboratory technique and constitute an infallible test only when the perspective of the observer is identical with that of the camera (70, p. 116).

The measurement of observer agreement is a more complex problem than was at first supposed because of the difficulty of differentiating between observational, recording, and interpretive errors. The use of a continuous time scale, while facilitating the measurement of agreement as to the occurrence of given events, introduces a further complication in the form of spurious errors due to slight differences in reaction time, or recording rhythm, of the paired observers (6, pp. 138-140).

Reliability tests have shown that a certain amount of observer disagreement due to differences in perspective and to the exigencies of the recording process is to be expected in life-situation recording but that observational errors of this sort can, with care, be reduced to a negligible minimum.

Of the two techniques commonly used to measure observer agreement, the percentage method gives a more exact estimate of reliability than the correlation method, since it measures agreement on identical items, not merely gross agreement on total frequencies per observation period (6, p. 149). Correlation is a particularly crude and deceptive method of measuring reliability when the behavior under observation occurs so infrequently that the majority of the scores are zeros.

The possibility that observer bias may sometimes be serious enough to affect the comparability of data obtained by different observers in the course of the same investigation is suggested by the results of limited research on this point (6, pp. 147-149; 41, pp. 52-60)..

The number of simultaneous observations needed to give a satisfactory estimate of reliability in any given instance will depend upon the purpose of the study, the simplicity or complexity of the recording technique, and the variability of the conditions of observation. In general, measures of reliability should be based on a comparison of simultaneous records taken by several different pairs of observers, the series of observations for each pair should be so planned as to include similar proportions of easy and difficult recording situations, and reliability tests should, if possible, be repeated at intervals during the course of the investigation.

#### *Validity of Measures*

The validity of the measures derived by time-sampling and related techniques is, broadly speaking, a function of three factors: the naturalness of the behavior observed, the accuracy with which it was recorded, and the adequacy with which it was sampled. If the obtained indices are interpreted solely as measures of the observed frequency of the behavior under the conditions of observation, validity is synonymous with reliability. If, however, as is usually the case, they are interpreted as representative of the normal behavior of the observed individuals in a particular situation or in all situations of a given type, their validity obviously depends not only upon the accuracy of the records but also upon the representativeness of the sampling.

The accepted criterion of validity in the sense of representative sampling of normal behavior in a given situation, in time-sampling studies, has been the internal consistency of the data as determined by the correlation, or other comparison, of measures based on different samples taken in the same manner in the same situation.

The most common method of measuring internal consistency involves a division of the total available data into halves composed, respectively, of the odd-numbered and even-numbered observations or behavior items and the correlation of measures based on the odd half with corresponding measures derived from the even half. To indicate the probable reliability of the total body of data, the correlation coefficients obtained in this manner have frequently been corrected by the Spearman-Brown prophecy formula. The advantages of the odd-even method are its ease of application and the fact that the samples compared are equated for the influence

of any time trend in the data. When, however, it involves the correlation of any considerable number of scores based on samples taken consecutively on the same day, it will presumably yield spuriously high coefficients because of the effect of continuity of activity on successive samples (5, p. 63). A method which is even more simple to apply, but which does not allow for consistent changes in behavior during the period covered by the observations, consists in the correlation of measures based on the first half of the total sample with those for the second half, or on some similar combination of subsamples (18, 21, 26, 28, 34, 41, 55, 56). Still another method involves the determination of the significance of the difference between the means of several subsamples taken in such a way that each is equally representative of the total series (6, pp. 156-157). In one study, the measure of validity was the correlation between scores obtained for the same individuals by two or more observers recording at different times (23, p. 31). A few investigators have correlated measures based on direct observation with corresponding measures based on indirect observation, "direct" observation of an individual comprising the records in which he was the immediate focus of observation and "indirect" observation, the incidental records of his behavior contained in the direct observations of other members of the group (5, 8, 12, 26, 35, 41). This procedure requires a considerably more complicated analysis of the data than any of the others mentioned and constitutes a comparison of results based on a relatively short sample with those for a considerably longer one, the reliability of which is not definitely known.

The usual criterion of validity in the broader sense of representative sampling of characteristic individual patterns or traits—that is, of the behavior most typical of an individual in all situations of a given type—has been agreement of the obtained measures with corresponding indices derived by other methods either in the same or in different situations. Tests of this sort have been extremely infrequent in the studies here under discussion.

In two of the Columbia studies it was possible to correlate the obtained scores with similar measures obtained contemporaneously for the same individuals by other investigators using entirely different methods (5, 13). To a limited extent, teachers' or parents' ratings have been used to validate observational scores (2, 32, 35, 51, 55, 56, 57, 58, 65). In a few instances, scores derived from observations in uncontrolled situations have been compared with measures of the incidence of the same behavior in experimental situations (9, 24, 28, 47, 51, 57).

Clearly, none of these tests affords absolute proof of the validity of either of the measures compared. If observational scores show substantial agreement with experimental scores, or with carefully determined ratings, the assumption is that both of the indices compared constitute valid measures of the behavior under investigation. If, however, the two indices purporting to measure the same behavior in the same individuals are markedly incon-

sistent, one with the other, it must be assumed that one, or both, was unrepresentative. In neither case is the evidence conclusive.

### *Factors Affecting Sampling Procedure*

The following facts have been definitely established in this area: (1) that a knowledge of the normal frequency of the behavior to be sampled in the situation in which observations are to be made is prerequisite to the selection of a satisfactory time-sampling procedure; (2) that the mere fact that freedom of social interaction is unrestricted in a given situation affords no guarantee that all types of social reaction will occur with similar frequency in that situation; and (3) that the effect of uncontrolled variables on the aggregate samples of behavior obtained in a given situation may not be the same for all individuals observed in that situation.

The results of investigations in which different aspects of social behavior have been sampled in the same situation by the same method have clearly demonstrated the importance of knowing how often the behavior to be studied normally occurs, on the average, in the sampling situation as a basis for deciding whether the time-sampling method is appropriate to the problem and, if so, what is the optimum method of time sampling for the particular purpose.

Goodenough (23) found, for example, that compliance, as defined for the purposes of her study, occurred too infrequently under conditions of free play to be adequately sampled in a series of 25 one-minute periods. Arrington (5) obtained more adequate samples of language than of physical contacts in series of 24 five-minute observations because of the greater frequency of the first-mentioned behavior. Manwell and Mengert (44) report that about half of the behavior items included in their observations were recorded too infrequently to justify subsequent analysis of the data. Murphy (51) cites the infrequency of occasions for the display of sympathy in the nursery play situation as one of several reasons for considering the time-sampling method inapplicable to her problem.

The obvious conclusions to be drawn from these and similar findings are (a) that time-sampling procedure is specific to the behavior sampled; (b) that a situation which is generally conducive to free social interaction may or may not be a suitable environment in which to observe the incidence of a particular social pattern by the time-sampling method; and (c) that if the behavior to be observed occurs too infrequently in the proposed situation—less than once in 15 minutes, on the average, let us say—some other method than that of short time samples or some other environment is indicated.

It was generally assumed, in the early applications of time sampling in the social behavior field, that all that was needed to insure a representative sampling of the normal behavior of an individual or group was the systematic distribution of the time samples within the period covered by the observations and that stable samples could be obtained in a relatively short time. With continued use of the method, it has become increasingly clear that a considerably greater expenditure of time is needed for adequate sampling of individual behavior than was at first supposed and that, in view of the impossibility of continuing the sampling process indefinitely under comparable conditions, a more careful selection of the time samples than is afforded by a routine system of rotation may be necessary.

The validity of the above-mentioned assumptions has been called into question by the findings of Loomis (41, pp. 28, 31) and Arrington (6, pp. 171-175) to the effect that the frequency and pattern of social behavior vary with the type of activity in which the individual is engaged, some activities being much more favorable to the occurrence of certain types of social behavior than others. This fact assumes importance when considered in conjunction with the further finding that the aggregate series of observations for a given individual may, and frequently will, include a disproportionate number of records taken during one kind of activity (6, p. 171).

Since the mere rotation of observations does not insure aggregate individual samples which are equally representative of all types of activity possible in the given situation, it may be necessary to exclude altogether those types of activity which particularly favor or inhibit the occurrence of the behavior under observation.

In determining the optimum length of the individual observation or time sample for a given purpose, factors to be taken into account, in addition to the frequency of the behavior, are the total time available for observation, the number of individuals to be observed, the number of aspects of behavior to be recorded at one time, and the probable frequency of interruptions affecting the continuity of observation in the particular situation in which the behavior is to be observed. The sample should be long enough to permit accurate recording of the focal behavior or behaviors and to avoid unnecessary waste of time between successive observations. It should be short enough to insure uninterrupted observation of the individual or group for the specified length of time and to permit the accumulation of enough samples to cover the normal

range of variability of the individuals observed with respect to the behavior under investigation.

The number of samples required to give stable measures will vary with the frequency of the behavior, the length of the time sample, the day-to-day variation in the conditions of observation, the variability of the subjects, and the method of measuring frequency within the time sample. Other things being equal, the more variable the conditions under which the samples are taken, the less frequently the behavior occurs, and the less consistent the observed individuals in manifesting the behavior, the larger the number of samples needed.

#### *Role of Time Sampling in Scientific Study of Social Development*

Time sampling has been defined as a method, the primary function of which is accurate measurement of the incidence of particular modes of behavior under particular conditions. It is a method of observation designed to furnish reliable summary measures of specific aspects of the normal behavior of individuals or groups in particular situations rather than to give a complete description of the total behavior complex at the time of observation. It is, in short, a measuring instrument capable of yielding exact information of a fairly specific nature and one whose major usefulness lies in areas which have previously been explored to a sufficient extent to permit the formulation of definite problems to be solved or specific hypotheses to be tested.

Since the ultimate place of time sampling in the methodological repertoire of the social sciences depends upon its ability to supply either more reliable information than other methods or types of information which cannot be obtained equally well by other means, a word should be said with regard to its advantages and limitations as compared with other measuring techniques currently applied to the same general problems, namely: the rating method and the controlled experiment. Compared with the first-mentioned technique, time sampling requires no prior acquaintance with the subjects and is a more reliable method, since it yields measures which are based not on judgments or impressions, dependent to a greater or lesser extent on memory, but on a carefully selected and recorded sample of observed incidents. Compared with the experimental method, time sampling is more easily applied, since it requires no special apparatus and can be used on a much more extensive scale. The major disadvantage of the method, as com-

pared with rating devices, and possibly also with experimental techniques, is that it usually requires a greater expenditure of time to obtain satisfactory measures.

The kinds of problems in the field of social development to the solution of which time-sampling procedures can best contribute have already been suggested. The two most heavily stressed in early discussions of the method were the determination of social norms and the definition of characteristic individual patterns of social reaction or the diagnosis and prognosis of the social adjustment of individuals. The potential usefulness of these methods in the first area has been fairly well demonstrated.

From the standpoint of the number of individuals observed under comparable conditions and the degree of control exercised over the conditions of observation, Fisher's study of language development (21) and the studies of social contact and language reported by Arrington (5, 6) are the best examples of normative time-sampling investigations so far reported. Goodenough's study of pronoun usage (24) and Anderson's work on dominative and integrative behavior (2, 3) represent normative uses of related observational techniques. Olson's study of the incidence of whispering in public school classrooms (54) suggests a type of normative investigation which could be easily executed and which might yield results of significance both for the social scientist and the educator.

The value of time sampling as a method of predicting individual behavior from one situation to another or from one stage of development to another remains to be determined.

Only eight of the studies here under review involved repeated observations of the same individuals at two or more distinct stages of development; only one (23), and that by accident, contemporaneous observations of the same individuals by the same method in two different life situations. Loomis (41) observed four kindergarten children previously studied in the nursery school, recording their behavior in the form of descriptive notes, since the technique previously used did not appear to give a sufficiently comprehensive picture of the social interaction of the older children. Fite (22) compared conflict and social contact scores for four children observed for varying amounts of time at intervals of approximately six months over a period of one and a quarter years. The social behavior of the Dionne quintuplets was observed at monthly intervals over a two-year period, but the definition of social contact was too comprehensive to yield adequately discriminative measures either of individual differences or of individual consistency (11). Somewhat more substantial evidence is afforded by the follow-up studies reported by Fisher (21), Arrington (5, 6), Jersild (33), and Jersild and Markey (35). When exactly comparable measures obtained at two different ages (in most cases in two successive years) were correlated, considerable consistency was found in the case of some behaviors, inconsistency in the case of others.

In general, the inconclusiveness of these tests is due to the small numbers of cases compared, the inadequacy of the correlation method when applied to such small numbers, and our present inability to determine how much of the observed variability was due to situational factors, how much to inadequate sampling at either, or both, observation periods, and how much to developmental changes in the individuals observed.

Other problems to which the method is applicable include the study of interrelations among different aspects of behavior in the same individuals (5, 23, 31) and the evaluation of relationships between social behavior patterns and known variables such as length of nursery school experience (34), artistic ability (19), and amount and type of material resources available in the situation in which behavior is observed (6, 36, 41). Techniques of this sort may eventually prove of value in the delineation of successive stages in the normal process of social development, in the determination of the sequence in which common social patterns are acquired, and in the measurement of stability and change in individual patterns of social behavior over a period of time.

#### *Research Suggestions*

The foregoing summary of the methodological information resulting from controlled observations of undirected social interaction has indicated that present knowledge of the time-sampling method is fairly rudimentary and is for the most part of a theoretical rather than a practical nature. The exploratory researches of the last decade and a half have tentatively defined the limits within which time-sampling techniques can profitably be applied and have demonstrated the general procedure to be followed in work of this kind, but we know as yet too little about the application of the method to specific problems to be able to predict with any assurance that a particular technique, applied under given conditions, will yield measures of a stated degree of reliability or stability. It is on exact information of this sort, however, that the ultimate usefulness of the method as a measuring instrument obviously depends.

Significant advance in knowledge of time sampling as a method of studying social behavior is contingent upon (a) the refinement of definitions of the behavior patterns to be observed, (b) the further development and eventual standardization of techniques for measuring the incidence of specific social patterns, (c) further study of

the factors affecting the sampling of particular modes of social reaction in particular situations, (d) more extensive and more carefully controlled tests of the validity of time-sampling measures as indices of the normal, or most characteristic, behavior of individuals, and (e) continued use of the method, when appropriate, at other age levels and in other types of situations than those represented by the majority of the projects thus far reported.

Vague and subjective definition of the behaviors observed and lack of uniformity in definition of the same behavior by different investigators have contributed to an important extent to the present paucity of exact knowledge in the social behavior field. Precise objective definitions of such concepts as leadership, sociability, coöperation, rivalry, resistance, domination, aggression, and the like, in terms of readily observable behavior acts, and substantial consensus among independent observers with respect to these definitions are prerequisite to any real progress in understanding the origin, development, and conditions of occurrence of these patterns. Concerted attacks on problems of definition, carried out either as separate methodological studies or in conjunction with further investigation of the incidence and patterning of particular social traits and combining careful surveys of the literature with extensive observation of the behaviors to be defined in a wide variety of situations, constitute, therefore, one of the first essentials in the advancement of knowledge in the field. Among the basic questions to be answered in this area are these:

(a) What are the observable manifestations of sociability, leadership, aggression, and other social patterns? What are the specific clues by which we determine how coöperative, how social, how competitive, etc. an individual is in a given situation? What are the specific behavior acts which, combined, distinguish the social from the unsocial person? the dominant from the submissive? the leader from the follower?

(b) Which of these objective clues are common to all ages and situations, which characteristic only of a particular age or situation?

(c) What are the common, and what the distinctive, characteristics of such related patterns as sociability and leadership? competition and rivalry? domination, aggression, and leadership? social participation and social contact?

The second major area of needed methodological research has to do with the further development, evaluation, and standardization of time-sampling techniques for measuring specific aspects of social behavior. In the case of those behaviors upon which enough preliminary work has already been done—namely, social participa-

tion and talkativeness—it should be possible to determine, with a minimum amount of further experimentation, which of the various methods thus far developed, or which combination of them, is likely to give the most reliable, the most stable, and the most discriminative measures of the behavior and what results can be expected from widespread application of this method. With the possible exception of studies of companionship and conflict, too little work has been done as yet on other aspects of social behavior to afford an adequate basis for the evaluation and standardization of measuring techniques. By “standardization” is meant the securing of definitive answers to the questions:

(a) What is the margin of error to be expected of the results obtained by the particular technique when it is used by different observers in different situations? Within what limits do observers agree, on the average, in recording the various behavior items they are supposed to record?

(b) What is the minimum number of samples needed for the particular technique to give stable measures of the behavior for the average individual? for a group of individuals?

Questions of the first type could presumably be answered by having several different observers, working in pairs in various combinations, apply the method simultaneously to the same individuals in the same situation and by comparing the results obtained in this manner in as many different situations as possible of the same general type. Information on the second point could be obtained by the accumulation of a large enough number of samples of the specified length, for the same individuals observed in the same situation, to afford a basis for the empirical determination of the point at which the addition of more samples ceases to have an appreciable effect on the measures of frequency and variability.

A third group of primarily methodological problems centers about the question of the effect of uncontrolled variables on the behavior indices derived by observation in life situations.

Observations of child behavior during informal play and work periods in nursery schools and kindergartens have suggested that the pattern of social activity in situations of this sort may be affected by such variables as the kind of materials used (6, 41), the presence or absence of particular persons (6), the amount of material equipment available (19, 36), and the amount of space available for play activity, as indicated by comparisons of indoor and outdoor records or of records taken on small, as contrasted with large, playgrounds (18, 35, 51).

The point to be determined with respect to the influence of

these and other variables is whether they operate in such a way as to have a differential effect on the aggregate samples for different individuals observed in the same situation or to reduce the comparability of samples taken in different situations. Since time sampling, to be effectively used as a measuring technique either in normative studies or in the study of the progressive social development of individuals, must yield measures which are independent, within small known limits, not only of the observer but also of the situation in which observations are made, it is important to determine, by such empirical tests as are feasible, whether or not such variations in the conditions of observation actually do have a significant effect on the comparability of the measures.

For definite evidence as to the generality or specificity of time-sampling measures and as to the usefulness of such measures as predictive indices, we shall have to await the results of contemporaneous studies of the same individuals in different types of social situations and longitudinal studies involving repeated observations of selected groups of individuals over a period of years. Further light on these problems as well as on the question of the range of applicability of the method outside the relatively narrow area within which it has thus far been applied may be expected to come gradually as the result of behavior studies planned with these points in view rather than from immediate attacks upon the methodological problems as such.

General suggestions for increasing the contribution of individual studies in this area include (a) more detailed description of conditions of observation, methods of measurement, and definitions, in published reports of research, to facilitate the checking of results by other investigators; (b) the omission of incomplete data from the main presentation of findings; and (c) the expression of results in terms of frequency of occurrence per time sample (number of occurrences of the behavior per 1-minute, 5-minute, 15-minute period, as the case may be), to facilitate comparison with results of related studies.

### III. BEHAVIOR FINDINGS AND RESEARCH SUGGESTIONS

The common concern of the methodologically related researches which constituted the working base for planning in this inquiry may be defined as the investigation of *age, sex, and individual differences in frequency and pattern of social participation* in situations conducive to normal social interaction. Although

differing widely in immediate purpose and specific behavior focus, these studies were designed to shed light on one or another of the following questions: To what extent, in what ways, and with whom do individuals normally become involved in social activity in situations affording ample opportunity for involvement? How do the frequency and pattern of social involvement vary with age? with sex? What is the normal incidence of social participation at different age levels? of particular patterns of social behavior, such as leadership, coöperation, rivalry, resistance? To what extent do individuals differ in degree of social participation? in pattern of social participation? What are the factors associated with these differences and to what extent are individual patterns of social participation subject to modification by training?

That little exact knowledge in these areas has resulted from careful observation of the social interaction of many different groups is not surprising in view of the empirical nature of the research in question, the diversity of problems attacked and methods used, and the manner of selecting the subjects of observation. The necessarily predominant concern of most of these projects with the development of suitable methods of measuring the behavior concerning which information was desired was one of the major factors operating to limit their contribution to knowledge of social behavior. As already indicated, research efforts have been scattered over a wide range of relatively unrelated problems and the results of studies dealing with the same, or related, questions are not directly comparable because of lack of uniformity in methods of defining, sampling, and measuring the frequency of the behaviors observed. A further circumstance operating to limit the number of generalizations concerning normal behavior to be drawn from these studies consists in the fact that the subjects were in most instances selected because of their accessibility in situations affording favorable research conditions rather than with a view to their being representative of a larger population. Age and sex constitute the only items of information about the children observed that have been reported with any degree of uniformity. With respect to the aggregate sample of young children represented by the combined researches in the field, we know, in addition to the reported information on age and sex, only that it was composed of white urban children of at least average intelligence, without physical handicaps, and drawn predominantly from the more favored socioeconomic groups.

*Facts Tentatively Established*

The two findings that have been sufficiently well substantiated by systematic observation of the undirected social activities of young children to warrant statement in the form of tentative generalizations have to do with age and individual differences in amount of social activity or degree of social participation and are, briefly, these: that the frequency of social activity increases with age during the preschool years, and that individuals observed in situations affording ample opportunity for social interaction differ characteristically in frequency of social involvement.

Many independent observers, using widely varying methods of defining and measuring the social reactions of hundreds of young children, agree that *frequency of social participation or social involvement, defined in terms of the number of observable overtures and responses of individuals to other individuals or groups or in terms of amount of time spent in social activity under conditions favoring free social interaction, normally increases with age during the first five years of life*. Although the statistical findings cited below are based on results obtained in observations of nursery school children ranging in age from two to five years, all the information we have concerning the process of social development from birth to two years supports the assumption that the increase in social activity is continuous from the appearance of the first social reaction early in the first year of life up to some point within or beyond the first five years. There is no reason to suppose, furthermore, that nursery school children differ conspicuously in this respect from other preschool children.

Four general types of evidence support the above statement. First, coefficients of correlation between measures of frequency of social contact or social participation and corresponding measures of chronological age have been uniformly positive and, with one exception, of the order of .6 or .7; coefficients representing the relationship between measures of nonsocial activity and age, negative and of correspondingly substantial size (5, 8, 23, 25, 58, 61). Second, comparisons of different age groups have shown that the older the group, the greater is the frequency of social contact and of participation in group activity, the greater the number of different individuals contacted per uniform time period, and the larger the individual indices of sociability (6, 26, 27, 28, 44). Third, the same individuals, observed at two distinct stages of development, have been found to participate in social activity more frequently at the later, than at the earlier, stage (6, 34, 43, 44, 75). Finally, indirect corroboration of the increase in social activity is afforded by the results of analyses of language records indicating that use of the first person plural pronouns is positively related to age (21, 24), that the percentage of remarks in

which another person is the subject of the sentence increases with age—that is, that children tend to talk to and about other people more often as they grow older (21), and that the proportion of social to total language increases markedly at successive age levels (6).

The second finding with respect to which there is substantial consensus is that *individuals, irrespective of age or sex, tend to differ consistently in the extent to which they normally become involved in social activity when observed in a familiar environment affording abundant opportunity for social interaction.*

One type of evidence bearing on this point is the wide range of variation in the measures of sociability obtained for the individual members of the various groups observed (5, 6, 8, 28, 34, 41, 42, 58). A second and somewhat more elusive sort of evidence is to be found in the internal consistency of the data relative to degree of social participation, in the fact that coefficients of correlation between individual measures based on the first and second halves, or on the odd and even halves, of the total sample have been uniformly positive and of the order of .7 or higher (8, 26, 28, 34, 41, 58, 61, 75). Further confirmation of the fact of basic individual differences in sociability is contained in the consistent results of contemporaneous studies of the same individuals by different investigators, in the fact that, despite varying definitions and methods of recording, certain individuals were found to be consistently unsocial, others consistently social (5). Children observed at two different age levels by the same method and under highly comparable conditions showed considerable consistency in amount of talking to other children and in number of different children addressed per five-minute observation (6). The finding reported by several observers that seemingly antagonistic patterns of response are positively correlated in certain individuals lends further support to the assumption of individual differences in general reactivity to social stimuli. That some individuals tend to get involved in any social interaction taking place in their immediate vicinity, others, to remain aloof from active participation in social activity, is suggested by the positive relationships found, for example, between measures of friendship and quarreling (26, 27) and between indices of sympathetic and aggressive behavior (51).

#### *Findings Lacking Adequate Confirmation*

The following findings reported by two or more observers using different definitions and techniques or by a single investigator on the basis of a considerable amount of careful observation require further confirmation:

- (1) Coöperation, leadership, rivalry, sympathy, and talkativeness increase with age during the preschool period.
- (2) Self-speech and quarreling decrease with age during the preschool period.
- (3) Boys are more social, more quarrelsome, and more aggressive than girls at the preschool level.

- (4) The sexes differ characteristically with respect to the kind of topics most frequently discussed in spontaneous conversation.
- (5) Preschool children tend to choose companions of the same sex.
- (6) Individuals tend to differ consistently in frequency of talking.
- (7) Language patterns vary with the situation in which they are observed.
- (8) Egocentric remarks occur as frequently in the conversation of adults as in that of young children.
- (9) Consistent individual patterns of nonsocial and "nonascendant" behavior are subject to modification by training.
- (10) Domination on the part of one individual tends to evoke domineering behavior in the responses of others to that individual.

The evidence concerning variation with age in the frequency of the above-mentioned patterns of behavior is meager and inconclusive.

Parten (58) and Graves (25) report positive correlations (.67 and .48, respectively) between measures of cooperative behavior and chronological age. Parten (59) and Goodenough (23) obtained positive correlations of .67 and .71, respectively, between leadership scores and age. Chevaleva-Janovskaja (16) reports that only 52% of the preschool groups observed had leaders and that the number of leaders increased at successive age levels. Age differences in rivalry are reported by Leuba (39) on the basis of a series of experiments in which rivalry responses were manifested by all but one child in the oldest of three preschool groups, were not observed at all in the youngest group, and were not clearly distinguishable in the intermediate group. Graves found no significant relationship between age and competitive behavior, but her definition of competition included conflict, aggression, and superiority as well as rivalry. Murphy's measures of sympathetic behavior (51) for the group having an age range of 26 months showed a correlation of .74 with age, and further indication of a relationship with age appears in an analysis of the average number of sympathetic responses per day for children observed during each six-month interval between two and four years. The correlation of measures of talkativeness with corresponding measures of chronological age has yielded positive coefficients ranging from .35 to .64 (21, 23, 25, 61). That children tend to talk to themselves less as they grow older is suggested by a negative correlation ( $r = -.31$ ) between age and frequency of "talking to self" (5) and by a marked decrease with age in the proportion of nonsocial to total language (6). The evidence as to the decrease in quarreling or conflict behavior with age is not clear-cut. Dawe (18) found an inverse relation between age and frequency of quarreling ( $r = -.41$ ); Green's data (26) show a tendency toward decrease with age; but Jersild and Markey (35) present results indicative of an increase, as well as a decrease, with age.

Common sense tells us that, with the exception of the decrease in conflict behavior, the above statements relative to age differences in social patterns are substantially true. We know that the

preschool period, particularly the two- to four-year age span, is the period of most rapid language development, that the pattern of talking aloud without an audience is contrary to the accepted mores of civilized society and is gradually trained out of the growing child, and that coöperation, leadership, rivalry, and sympathy are sophisticated social patterns which appear at a relatively advanced stage in the process of social development. But the evidence as given cannot be considered valid proof from the scientific standpoint. The number of cases in the various age groups compared has been too small, the reliability of the behavior indices inadequately demonstrated in some instances (18, 25, 51), and the measures of age loosely determined. For definitive information on changes in the incidence of specific social patterns with age, it is essential that the behavior should be more clearly defined than has been the case in several of the studies cited, that it should be sampled in a much larger number of cases at each age level (a minimum of 50 individuals, let us say), and that the measures should represent frequencies carefully determined at monthly or even weekly intervals rather than the average frequency for a period of several months or for an entire academic year. Assuming uniformity in definitions and recording techniques and equally reliable observers, the desired result could be attained by the pooling of data from a series of small-scale nursery school studies so planned as to include as representative a sample of the preschool population as possible.

Three investigators have reported sex differences in frequency of social activity; three others, no significant relationship between sex and measures of social participation or social contact.

Arrington (6) found that, in kindergarten and first-grade groups containing approximately equal numbers of boys and girls, the boys talked significantly more to, and were more often involved in physical contact with, other children than the girls. Hagman's companionship indices (28), representing the ratio between frequency of reaction to other children and opportunity to react, were larger, on the average, for boys than for girls in a group of four-year-old children. Chevaleva-Janovskaja (16) reports that boys participated in group activity more often than girls. Goodenough (23), Graves (25), and White and Williams (75), on the other hand, found no sex differences in sociability. Dawe (18), Jersild and Markey (35), and Green (26) agree that boys quarrel more than girls, at least during periods of free play in the nursery school. If it is true that boys engage in group activity more often than girls in this type of situation, crude measures of frequency of conflicts, unadjusted for differences in sociability, would naturally be higher for boys because of the greater number of opportunities for the behavior to occur in group situations. The sex difference in aggressive behavior is reported by Dawe, Jersild and

Markey, and Caille (13). Anderson's data on sex differences in the incidence of dominative behavior in kindergarten children observed in an experimental situation (3) agree with this finding, but his more extensive data on preschool children showed a consistent trend in the opposite direction, the girls having higher domination scores than the boys (2).

To prove or disprove the existence of genuine sex differences in the behaviors mentioned, many more children would have to be observed by the same method and under exactly comparable conditions. Extensive observations not only in nursery schools but in other environments would be needed before any valid conclusions concerning the universality of the differences could be drawn. To determine whether the differences, if they exist, are characteristic of the entire two- to five-year range or only of the latter part of the preschool period, it would be necessary to compare sex groups, carefully equated for age, at successive stages of development within this period.

Sex differences in the content of spontaneous conversation have been reported in five language studies.

Fisher (21), analyzing, from the standpoint of grammatical structure, samples of the spontaneous language of 62 preschool children, representing approximately nine hours of observation per child, noted a consistent tendency for girls to talk about other people more than boys and an even more consistent tendency for boys to talk about things (objects) more than girls. This finding is of interest in that it conforms in general with the results of a series of psychological studies concerned with the measurement of sex differences in the basic interests of adults as judged by the kind of subjects most frequently discussed in spontaneous conversation (14, 38, 50, 67). Although differing considerably in methods of data collection and in detailed findings, these projects have tended, on the whole, to show that men talk more about business and money, sports, in general about impersonal matters; women, more about other persons.

The technique used in the latter studies, as already indicated, was that of eavesdropping, listening in to conversations without the knowledge of the individuals observed. Since specific tests of the reliability of observations of this sort are rarely feasible, the dependability of the results becomes a function of the number and variety of situations in which language is sampled or of the amount of data obtained in a particular type of situation, on the one hand, and of the objectivity of the subsequent classification of remarks into categories, on the other. From the latter standpoint, as well as from that of the uncertain reliability of the original observations, the results of all of these studies are open to question. If the point is deemed worthy of further investigation, it is sug-

gested (a) that, in future observations of this type, the language samples should be recorded verbatim by observers specially trained in the recording of language under adverse conditions; (b) that, in the observation of continuous conversations, remarks be sampled at regular intervals to avoid bias in selection, as was done in one of the samples recorded by Henle and Hubbell (29); and (c) that the categorization of remarks be in terms of a classification sufficiently objective to yield highly consistent results when applied independently to the same data by any number of different persons.

With respect to the preference of preschool children for companions of the same sex, Hagman (28) found that unisexual groups predominated among four-year-old children but observed "no decided preference for like sex or unlike sex companions" in two-year-old children. Challman's data (15) indicated that even the youngest children tended to discriminate on the basis of sex in the selection of companions. Green (26, 27) noted a predominance of unisexual friendships. Arrington's records (6) of speech addressed to other children by younger nursery, older nursery, kindergarten, and first-grade children showed that boys talked predominantly to boys and girls to girls in all but one of eight age-sex groups, the deviation in this instance being due presumably to the fact that the group in question contained a considerably larger number of boys than of girls. The proportion of "total speech to children" addressed to children of the same sex was significantly higher in the kindergarten and first-grade, than in the nursery, groups, a fact which corroborates Hagman's results relative to the lack of pronounced discrimination on the basis of sex on the part of the younger children.

Sex preferences in choice of companions, if they exist, undoubtedly represent the result of the conscious or unconscious inculcation of the traditional mores in the young child by adults and older associates rather than a phenomenon of genetic origin. More extensive observations of young children at successive ages during the preschool period and in other situations than the nursery play period are needed to validate or disprove the assumption that discrimination on the basis of sex in selection of companions is generally characteristic of most preschool children or of most children during certain phases of the preschool period.

The evidence as to consistent individual differences in talkativeness is similar to that for consistent patterns of sociability.

Individuals observed over a period of weeks or months in situations imposing a minimum of restriction upon linguistic expression have been found to differ markedly in frequency of speech (5, 6, 55). Odd-even and similar reliability coefficients for measures of language frequency obtained in such situations range from .68 to .95, indicating a relatively high degree

of internal consistency in the individual samples (5, 21, 55, 61). The small amount of data available concerning the stability of patterns of frequent or infrequent talking over a longer period of time lends support to the assumption that some individuals remain consistently talkative, others consistently nontalkative, in social situations. Fisher's correlation of nursery school and kindergarten measures of the average number of remarks per hour for 10 children (21) yielded a positive coefficient of .48. Arrington's data on frequency of social speech in children observed at two different periods showed that certain children consistently maintained the same general position in relation to other members of the group, a consistency which is surprising in view of the extremely small size of the groups involved (6). Shirley (66) concluded, from observations of 25 babies made once a week during the first year, once every two weeks during the second year, and at more widely spaced intervals up to the age of four and a half years, that the talkative babies became talkative children and that the nontalkative babies tended to become nontalkative children.

For more conclusive information as to the stability of individual patterns of talkativeness at any given stage of development, it will be necessary to observe the behavior in a much larger number of cases and to observe each individual in more than one situation. Carefully controlled longitudinal studies of the same individuals involving repeated measurements of the behavior at monthly, or more frequent, intervals over a period of years will be needed to determine the extent to which patterns characteristic at one age remain characteristic at later ages.

That language patterns vary with the situation in which they are observed is the conclusion drawn by Goodenough (24) from an analysis of children's use of pronouns based on samples of 50 consecutive remarks per child recorded, for each of a group of 203 children, in a controlled and in an uncontrolled situation. The most consistent finding of this study was that the first-person pronouns "I, me, myself" and the possessives "my, mine" occurred more frequently in conversation with other children during free play than in conversation with an adult in a controlled situation. McCarthy (47), in a previous study of the same nature, had found that "egocentric" responses occurred more often during free play than in the controlled situation.

In view of the known difficulty of recording the language of young children accurately in longhand, particularly in uncontrolled situations, more substantial evidence of the reliability of the language records than has been reported by either of these investigators will be necessary before this finding can be considered adequately demonstrated. It is important to know not merely that observer agreement on the total number of pronouns recorded per child in each of the two situations is high when measured by

the correlation technique but also that independent observers agree substantially in recording each of the separate remarks included in the sample. Jenkins (69, Chap. X) states that, in a controlled situation in which the task of recording was relatively simple as compared with recording under real-life conditions, stenographers recorded approximately twice as great a proportion of the total words spoken as graduate students recording in long-hand, that even the best stenographers missed about 15% of the total number of words, and that errors included omissions, use of wrong words, and addition of words not actually spoken. We need to know, further, whether a series of 50 consecutive remarks constitutes an adequate sample of a child's language from the standpoint not only of the total number of pronouns used but also of the relative frequency of the different pronouns. Goodenough's odd-even reliability tests show only that the sampling of the total number of pronouns used was reasonably adequate. For a satisfactory explanation of this finding, if it should be substantiated by further research, we would need to have more specific information concerning the conditions under which the samples were taken in the two situations.

Analyses of the structure, content and function of language in young children have consistently shown that egocentric remarks represent a relatively high proportion of children's speech.

Piaget (60, Chap. I), defining egocentric language to include "remarks that are not addressed to any one, or not to any one in particular" and that "evoke no reaction adapted to them on the part of any one to whom they may chance to be addressed," found that the proportion of such language in the total speech of two boys aged six and a half years was 39% for one, 37% for the other. Dividing the number of egocentric remarks by the total of all other spontaneous remarks (answers excluded), he obtained a coefficient of egocentrism of .47 for the first boy and one of .43 for the second. Analysis of a second sample, less than half as large as the first, recorded for the first of the two boys approximately six months later under similar conditions, yielded a coefficient of .27. Fisher (21) obtained a mean coefficient of egocentricity of .53 for her entire group by dividing the total sentences in which the subject was the speaker himself by the total of all other sentences. This index remained relatively constant and showed no significant relationship with increase in age during the pre-school years.

On the basis of these and similar findings, it has been assumed that children's language is more egocentric than that of adults and that a decrease with age in the proportion of egocentric, as contrasted with socialized, speech is characteristic of normal social growth.

To test this assumption, Henle and Hubbell (29) took verbatim records of adult conversations overheard in a variety of different situations and classified each remark "from the point of view of its meaning rather than of any literal grammatical criterion." Their category of "ego-related" sentences included statements of "the activities of the speaker, of his feelings and emotions, his ambitions, desires and interests" and statements of "opinions, attitudes, preferences, criticisms, in short, all evaluative and normative statements." Since the proportion of ego-related to total remarks averaged 40% for the four samples taken, the investigators conclude that "adults talk about themselves, their activities and their views to as great an extent as do children."

This finding is of interest in that it casts further doubt upon an assumption that has as yet no substantial basis in observed fact. For any adequate test, however, of Piaget's hypothesis that, up to the age of about seven years, "children think and act more egocentrically than adults," we shall have to have studies of adult and child language which are much more nearly comparable with respect to definitions of egocentric and social language, size of sample and conditions of sampling than those thus far reported.

One of the most interesting of recent developments in the child behavior field has been the attempt to modify consistent patterns of social behavior by training, to make unsocial children more sociable and submissive children more self-assertive.

Jack (32), the pioneer in this type of experiment, has presented evidence indicating that nonascendant (submissive) children can be made more ascendant in situations involving the use of certain materials by giving them special training in the skills required by those materials. Although only five children received the training and were subsequently compared with untrained children of the same age, the results of the study tend to show that a substantial modification of the behavior previously characteristic of these individuals was effected as the result of the increased self-confidence gained in the training situation. Page (57), applying the same technique to a much larger number of cases, attempted to answer some of the questions raised by Jack's experiments. In addition to corroborating Jack's finding, for moderately ascendant as well as non-ascendant, and for three-year-old as well as four-year-old, children, her data showed that the ascendance scores of the trained subjects remained relatively stable in repeated tests over a period of months and gave some slight evidence of a transfer of the effect of the training to behavior in the free play situation.

In a more extensive series of experiments still in progress, Koch (37) has been working on the assumption that unsocial children can be made more social by frequent and varied practice in associating with other children. The preliminary findings of this investigation indicate that the simple procedure of segregating the unsocial child in a separate playroom for 20 minutes a day, with different members of the group serving as companions on different days, resulted in a considerable change in the be-

havior of unsocial children. It is reported, further, that the experimental subjects maintained their lead over the children used as controls as long as they were observed—that is, for three months after the special treatment had been discontinued.

Whether or not lasting changes in the social behavior of young children can be effected by these or similar techniques can be definitely determined only by applying the training to a much larger number of cases, comparing the trained subjects with carefully matched controls, and continuing the observations and measurements for a considerable period after completion of the training. From a common-sense standpoint, the Jack technique, by reason of the specificity of the training, might be expected to have less permanent results than the methods used by Koch.

The hypothesis that domination on the part of one individual tends to evoke dominative behavior in the responses of others to that individual has been advanced by Anderson (2, 3) on the basis of records of the spontaneous social reactions of 177 preschool and kindergarten children, each of whom was observed in paired combination with from 2 to 10 other children in a controlled environment. The evidence presented in support of the above assumption consists of (a) correlation coefficients of  $+ .68$  between high domination scores in 513 preschool pairings and the companions' domination scores and corresponding coefficients of  $.85$  and  $.82$ , respectively, for 63 and 24 pairings of kindergarten children, and (b) significant differences revealed by the analysis of cross-pairings of orphanage nursery and orphanage control children and of cross-pairings by sex. The statistical results of these studies tended to show, in other words, that the companions of individuals having high domination scores also had high scores for dominative behavior, that the orphanage control children became more dominating when paired with orphanage nursery children, the most dominating of the three preschool groups studied, and that preschool boys were more dominative when paired with girls than with other boys, girls being more dominating than boys when data for the three groups were combined. Similar evidence is adduced in support of the hypothesis that "integrative" behavior incites "integrative" rather than dominative behavior in others.

These findings, though highly suggestive, cannot be accepted as adequate proof of the hypotheses as stated. Since the correlation results show only a probable association, not a cause-effect relationship between the behavior patterns of the paired individuals, it cannot be inferred that either dominative or integrative behavior *evokes* or *induces* its like in others. The conflict in some of Anderson's findings at the kindergarten, as compared with the preschool, level, notably the complete reversal of the previous result relative to sex differences in dominative behavior, suggests the desirability of a re-examination of the technique, of the defini-

tions of the two behaviors, and of the adequacy of the samplings of individual behavior based on a series of five pairings. Contemporaneous observations of the same individuals in uncontrolled group play situations, with behavior defined and recorded in the same manner as in the controlled situation, would provide a further check on the validity of the experimental findings.

### *Research Problems and Procedures*

Having briefly indicated the points at which knowledge has begun to crystallize as the result of this series of essentially uncoordinated, empirical researches, we come to the second phase of our original problem. How can time-sampling and similar techniques contribute to the further advancement of knowledge of the process of social development and the patterning of social behavior in the individual? How can the rudimentary information gained in the course of experimentation with techniques of controlled observation in the social field serve as the point of departure for the planning of more fruitful observational studies of human social behavior? What are the problems the solution of which will directly contribute to the consolidation and expansion of present knowledge?

In conformity with the basic purpose of the report, as embodied in these questions, research problems have been selected with a view to their immediate relevance to work already done, to the feasibility of the proposed investigations in terms of available techniques and facilities, and to the probable importance of the information to be gained. Suggestions are confined to those aspects of social behavior that have already been investigated by observational or experimental procedures of the time-sampling type and to those problems relating to the incidence and patterning of these behaviors which can profitably be attacked by these methods. Major emphasis is on further research in the preschool field for the reason that time-sampling techniques have been developed with particular reference to this age period and that the significant problems in this area are as yet unsolved. It is assumed that, pending the development of reliable techniques for sampling social behavior under the ordinary conditions of home and community life, most of the proposed research will be carried on in nursery schools and day nurseries, in public or private elementary and secondary schools, or in orphanages, foundling hospitals, or other institutions for the care of homeless children.

*Studies of Normal Development and Individual Variation in Frequency of Social Participation*

The one fact concerning the normal course of social development during the preschool period that our survey has shown to be sufficiently well confirmed by scientific, as well as lay, observation to be accepted as definitely known had reference to the increase with age in gross amount of social activity, and even this relationship could be stated only in very general terms. For a clearer understanding of the normal pattern of development with respect to frequency of social activity or degree of social participation, we need answers to the following questions. Is the observed increase in socialness during the preschool period continuous or intermittent, gradual or spasmodic? Is the rate of increase approximately the same, or different, for different individuals? Does social activity continue to increase beyond the five-year level, or do patterns of sociability tend to become stabilized at some point within the first five years? If individuals do acquire stable patterns of responding very often, moderately often, or with extreme infrequency to social situations, irrespective of the type of situation, what is the mean age, and the range of variation with respect to the age, at which approximate stability is reached? To what extent are nursery school children representative of the general population in this pattern of increase in sociability with age? Does the same developmental pattern hold for different race and nationality groups (Negro, Indian, Mexican, etc.)? for homogeneous groups of low and high socioeconomic status? for children brought up in institutions as compared with those reared in private homes?

In any comprehensive attack on these and other problems pertaining to normal social development in the early years of life, both large- and small-scale studies and both cross-sectional and longitudinal approaches will be needed. There should be cross-sectional studies focused on the discovery of *common* patterns in the social development of young children, on the definition of age norms to serve as points of reference against which to check the development of particular individuals, and on the verification or disproof of present hypotheses relative to sex differences in social behavior. Careful measurements of the incidence of various behaviors (social contact, social participation, language frequency, social and nonsocial speech, conflict, resistance) at specific age levels—at successive half-yearly intervals between the ages of two and five years, let us say—might, for example, be made for

each individual in an aggregate sample totaling from 50 to 100 cases at each age point, the sample at each age level being selected in such a way as to be as representative as possible of the general population of American preschool children with respect to geographic, nationality, racial, socioeconomic, and other factors and being equally balanced as to sex. Definitions, recording techniques, and methods of measuring behavior frequency would necessarily be held constant throughout any comprehensive normative investigation of this type.

Other cross-sectional studies might be concerned with measurement of the same aspects of behavior in homogeneous subgroups of the general population (race, nationality, socioeconomic, and other groups) with a view to the definition of tentative norms of development and the possible discovery of significant differences in the developmental pattern.

There should certainly be longitudinal studies of the same individuals covering as wide an age span as is feasible and designed to give more definite information concerning the actual process of social growth in the individual, the sequence and rate of development, the factors related to the formation of consistent patterns of social reaction, and the stability of these patterns over a period of years. The value of these longitudinal studies of variation in the incidence of different patterns with age would be greatly enhanced if descriptive records of the context in which behavior occurred were kept by a second observer simultaneously with the quantitative records of behavior frequency.

In all of these studies it is important that the age measures should be more accurately determined than has been the case in previous research of this sort. To this end it is suggested that the summary scores at each age level be based on a series of short samples taken during the week, or two weeks, immediately preceding and the week, or two weeks, immediately following the date of attainment of the given age rather than on a series of samples distributed irregularly over a period of several months. It is also desirable that all possible supplementary information of an objective nature such as father's occupation, size of family, number, age and sex of siblings living at home, nationality, race, etc. should be recorded for each individual observed, with a view to the subsequent evaluation of relationships between observed patterns of social behavior and such of these factors as appear to be significant.

Our second tentative generalization had to do with individual

differences and individual consistency in patterns of sociability. The evidence contributed by time-sampling and related studies concerning the stability of patterns of social and unsocial behavior observed to be characteristic of given individuals in particular situations is, as we have seen, extremely meager. The essential questions to be answered in this area are these: To what extent are individuals consistent in degree of social participation when observed in different situations at any given stage of development? Do children defined as extremely social, moderately social, or definitely unsocial on the basis of observations in one situation, *e.g.* the nursery play period, display similar or divergent patterns in other situations affording comparable opportunities for social activity? To what extent do individual patterns of sociability, defined at an early age, persist at later stages of development? Do children who rarely become involved in social interaction when observed during free play in a preschool group continue to be conspicuous deviates in this respect as they grow older? Conversely, do children who rank high in sociability at the preschool stage remain highly social individuals when observed in other groups at later ages? Is consistency characteristic of some individuals, inconsistency, of others? What are the factors which, in the normal course of events, operate to modify patterns of unsocial behavior, and how permanent are the changes produced by experimental techniques of the sort used by Jack, Page, and Koch?

For the solution of these problems, we must look to the results of extensive series of contemporaneous observations of the same individuals in different situations and of longitudinal studies of the continuous process of development in selected individuals over a period of years. Application of different measures of sociability to the same individuals should also yield pertinent information on these points. Degree of responsiveness to strangers in an unfamiliar situation has, for example, been used in clinical (72) and experimental (45) studies of child behavior as an index of basic individual differences in characteristic patterns of social reaction. It would be of interest to know whether children who habitually initiate frequent contacts with other children or spend a predominant proportion of their time in social activity when observed over a period of months during free play with familiar associates would also be the ones to make immediate spontaneous overtures to strangers if observed in a completely new environment. Follow-up studies of children classified at the nursery school level as extremely social or unsocial, involving other measures of social par-

ticipation, such as voluntary participation in group discussion in the classroom, voluntary participation in extracurricular activities, club membership, attendance at club meetings, being an officer of a club or other organization, etc., should shed light on the stability of the individual patterns and the predictive value of the original measures and should also give some indication as to whether the indices of social participation currently used at different age levels measure the same thing.

Since there have been as yet no longitudinal studies of the continuous process of social development in the individual and few investigations specifically focused on problems relating to the etiology of patterns of sociability, we can only conjecture as to what are the significant factors contributing to the formation and persistence of consistent patterns of socialness and unsocialness. The problem is to determine what particular combination of genetic and environmental factors results in behavior at the one extreme and what other combination of individual characteristics and environmental influences is needed to produce behavior at the opposite extreme. For leads as to what are the important relationships to be investigated on a more extensive scale by time-sampling procedures, we shall have to rely mainly upon careful descriptive records of the day-to-day behavior of individuals in relation to its immediate context and upon supplementary information derived from interviews with parents, teachers, and others intimately acquainted with the subjects of observation. Some indication of the possible significance of specific factors may, however, be obtained by relating measures of sociability to such other objectively determined measures as seem likely to be important. The correlation of measures of sociability with corresponding measures of mental age, IQ, height, and weight has given no evidence, and would normally be expected to give none, of any significant relation between frequency of social activity and either intellectual or physical development. Environmental factors which might be related to patterns of sociability and which might be observed or objectively measured would include the previous experience of the child in social relations (rejection of his overtures by others), domination of the child by one or both parents, sociability patterns of the parents, size of family, and number of siblings near the child's own age living at home.

It is commonly assumed that children who have attended nursery schools are better adjusted socially than those who have not. The benefits of daily association with other children of the

same age, particularly in the case of only children, is, in fact, one of the principal arguments for the enrollment of children in nursery schools. There has been as yet, however, no adequate appraisal of the actual effect of this factor either on the degree or the pattern of social participation. The study reported by Jersild and Fite (34) gave no clear evidence on this point for several reasons: the number of subjects was small, too many variables were uncontrolled, the interval between the measures compared was too short (one set being taken in the fall of one year, the other in the spring of the succeeding year), and the second set of measures was based on a much shorter sampling of behavior than the first. One approach to this problem would involve a study of the social behavior, in the kindergarten, of two groups equated for age, intelligence, home background, number of siblings, etc., one of which has had at least one, preferably two, years of nursery school experience, the other, none.

A final group of problems in this area concerns the relation between frequency of social activity and other aspects of behavior in the same individuals. The relation between growth in degree of social participation and in development of language might well be explored. Does the peak of development with respect to frequency of social participation, if there is one, coincide approximately with the point at which complete mastery of the form and structure of adult language has been attained? Are individuals with conspicuous speech defects or otherwise retarded in language development also below average in frequency of social involvement? Conversely, is marked maturity in language development significantly associated with a high degree of sociability? Is there a significant relation between sociability and other forms of expressive behavior, as, for example, amount of physical activity and total frequency of vocalization?

#### *Studies of Normal Development and Individual Variation in Pattern of Social Participation*

Studies of the undirected social activities of children have suggested that the pattern of social development in the individual normally follows a uniform sequence with respect to stages of social participation and proportionate use of the basic modes of interpersonal communication—speech, physical contact (*i.e.* touch), and gesture. It has been observed that young children, when first exposed to other children of the same age, at first play independently, spending a considerable proportion of their time in

watching the activities of others, then play near other children, using similar materials but still independently, and, finally, engage in organized group activity. It would be worth while to know whether the majority of preschool children pass through each of these stages and what is the average age at which the transition from the first to the second, and from the second to the third, occurs. Presumably the unsocial children are the ones who, for some reason, do not make the transition from the first to the third stage.

Observations of the incidence of different types of social contact have tended to show that as children become more proficient in the use of language, physical contact (hitting, pulling, pushing, exploring by touch, etc.) becomes a less frequent mode of communication and that gesture, although present in rudimentary form during the first year of life, is of negligible importance as a means of communication during the first five years. The proportion of physical to total contacts (verbal and physical combined) has, for example, been found to be smaller for three-year-old than for two-year-old children (5). The absolute and relative frequency of these three modes of behavior at successive age levels during the preschool period could readily be determined by time-sampling procedures. Observation of young children has also suggested that certain socially disapproved patterns in the use of language and physical contact—such as talking aloud to one's self and knocking children down to see what happens—normally appear and disappear during the preschool period. Whether or not these patterns are common to all children, the age limits within which they appear and disappear, and the conditions contributing to the persistence of the patterns in certain individuals are problems for investigation.

Individual differences in talkativeness and in frequency of physical contact have been noted. Studies of the stability of individual patterns of extreme frequency or infrequency of speech or physical contact and of the factors contributing to the formation of such patterns are needed.

Loomis' finding that frequency of physical contact was inversely related to muscular tension—that is, that the least tense individuals tended to have the most contacts, and vice versa—although based on only 13 cases, was sufficiently consistent to justify the assumption of a significant relationship and needs to be verified (41). That early discovery of consistent patterns of extreme frequency or infrequency of physical contact might contribute to the better understanding or even to the prevention of certain types of mental and social maladjustment in adults has

been suggested by observations of mentally diseased individuals and their prototypes in the normal population (74, pp. 61-62). Longitudinal studies of individuals diagnosed as extremes in patterns of physical contact at the preschool level should indicate whether this lead is worth following further.

Finally, comparative longitudinal studies of the social development of children diagnosed at an early age as leaders and non-leaders, as extremely dominant and extremely submissive individuals, or as deviates with respect to the manifestation of other patterns of social reaction should contribute to knowledge of the stability of these patterns or traits in the individual and of the predictive value of the measures used to define them, and should also shed some light on the etiology of the behavior patterns.

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## PSYCHOLOGY AND THE WAR

Edited by

STEUART HENDERSON BRITT

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## PSYCHOLOGY AND THE FUTURE

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HERBERT A. SIMON

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## PREPARATION FOR THE INTERSOCIETY CONSTITUTIONAL CONVENTION

The Emergency Committee in Psychology has delegated to the Subcommittee on Survey and Planning the advance arrangements for the Intersociety Constitutional Convention. The convention was voted by the various societies in their September meetings, and delegates are now being selected. The Subcommittee, under the chairmanship of Dr. Robert M. Yerkes has the following suggestions to make for preliminary discussions among psychologists.

The Subcommittee on Survey and Planning of the Emergency Committee in Psychology recognizes that there are functions which the professional societies can accomplish better in cooperation than separately. Local groups of psychologists should be encouraged to clarify their thinking with regard to the ways in which different types of organization may promote or hinder the desirable activities and vigor of a profession.

The results of such discussion, transmitted through the delegates to the Intersociety Constitutional Convention, will facilitate the chances of reasonable action in line with the wishes of the members of the various societies. Because of the interruption of society meetings during the war, it is especially important that such discussions go on regionally and locally.

In order to discuss desirable types of organization which professional societies serve, it is essential to have in mind the nature of the functions. Some already served by psychological societies, and some prospective functions, are listed below:

1. Public relations and the focalization of prestige.
2. Articulation with other professions.
3. Publications.
4. Scientific meetings.
5. Survey and planning for the profession.
6. Promotion of scientific research in all fields.
7. Promotion of the social utilization of science.
8. Training programs.
9. Certification.
10. Maintenance of a personnel and placement office.
11. Protection against fraudulent claims.
12. Regulation of professional conduct.

The advantages of carrying out some of the functions cooperatively are considerable. In order to sharpen our awareness of the social obligations and opportunities of our profession, it is impor-

tant that the development of psychology be seen in perspective. Practical support is needed for science, and prestige for its applications. The gains of any one branch of psychology should in some measure accrue to the entire profession.

Many organizational patterns have been evolved by different professional groups to make provision for the functions just mentioned. The three possibilities\* presented below are typical of existing professional societies, but the list is by no means exhaustive:

1. A loosely organized intersociety council exercising a few selected functions, but with a minimum of executive responsibility and power. The existing societies retain maximal autonomy.

2. A federation of societies, each having a large measure of autonomy, but delegating more functions to an executive council. Membership in the federation is by societies only; individuals are members of the societies.

3. A unification of the profession in one society with such divisional organization as necessary to meet the functionally differentiated interests of the members.

Under any of these types of organization it presumably will be desirable to delegate certain of the functions to a service agency; such functions as the business management of publications, public relations, and others from the list above.

The service agency provides problems of its own. One of them is how to secure strong employed personnel, able to handle the varied professional and public relations problems, without such a continuing staff becoming the center of control. In other words, careful discussion is essential to decide what precautions are necessary to preserve democratic control and to facilitate the infiltration of new ideas.

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\* For further discussion of the problem of organization see the first two reports of the Subcommittee on Survey and Planning for Psychology. (1, 2).

## PERSONNEL RESEARCH IN THE ARMY

### I. BACKGROUND AND ORGANIZATION\*

BY STAFF, PERSONNEL RESEARCH SECTION, CLASSIFICATION AND ENLISTED REPLACEMENT BRANCH,  
THE ADJUTANT GENERAL'S OFFICE

The problems involved in the classification of military personnel in the armed forces of the United States have recently been the subject of a number of articles appearing in both scientific and popular journals. Relatively little, however, has been published directly concerning the functioning of the agency and staff which develops the psychological classification tools and methods of the Army. The present article will survey the background, organization, and field of responsibility of the Personnel Research Section of the Classification and Enlisted Replacement Branch, The Adjutant General's Office, War Department.

The Classification and Enlisted Replacement Branch develops classification procedures for all men in the Army Ground Forces, Air Forces (with the exception of air crews), and Services of Supply. The Personnel Research Section is charged with the preparation and installation of all tests used in (1) induction of men, (2) initial classification, (3) reclassification and selection of men for specialist training, and (4) special selection problems such as those concerned with officer candidate qualifications, combat intelligence, or aptitude for military police work. The Section also coordinates any studies made in the area of Army classification and writes the detailed testing procedures for bulletins and manuals.

The period of American participation in the first World War was marked by notable achievements in the field of military personnel procedures. No provision was made for specialized responsibility for placing recruits until after mobilization had begun in the early summer of 1917; but in spite of the enormous proportions and the immediacy of classification tasks, the place of scientific tools in the Army personnel system was firmly established by the time of the Armistice. It has been generally recognized that to the United States Army belongs the credit for developing personnel methods which have since been widely

\* A subsequent article will deal in detail with past accomplishments and current projects of the Personnel Research Section.

copied by the armies of other nations, and which have had an important effect upon the progress of comparable civilian work.

Testing and classification were the functions of two agencies in 1917 and 1918, because of the fact that mental testing was at first considered merely as a reliable method of eliminating mental incompetents who would be altogether unable to learn the performance of even the simplest military duties. The services of the men who devised the Army Alpha and Beta tests were therefore offered to The Surgeon General; and the Division of Psychology of the Medical Department continued in charge of this work until the end of the war, although the Division's functions, as they developed, departed radically from the narrow field originally envisioned.

The Committee on Classification of Personnel in the Army (subsequently the Classification Division), on the other hand, worked for the duration of the war under The Adjutant General. It was soon realized that the functions of these two groups were complementary, but responsibility for personnel work was not yet centralized by the time of the Armistice. Some of the methods and instruments devised during the first World War are still in use, although much modified by changed conditions and further study: the principle of the general classification test, for example; the use of an Army grade system for indicating degrees of relative ability to learn; and trade tests. The work of the Division of Psychology of the Medical Department; the Classification Division, Adjutant General's Department; and of individuals such as Yerkes, Scott, Bingham, Otis, Dodge, Thorndike, and Terman has been dealt with in "Psychological Examining in the United States Army," Vol. XV, *Memoirs of the National Academy of Sciences*, 1921; and in "The Personnel System of the United States Army," published by The Adjutant General's Office in 1919.

The interest which had developed during 1917 and 1918 in the problem of military personnel classification hardly survived the Armistice. From 1918 until the years immediately preceding the outbreak of hostilities in Europe in 1939, very little attention was given to the question of how the Army could best make use of the abilities and training of men by efficient classification and placement. Army regulations after 1918 called for the administration of a shortened Stanford-Binet test to recruits, but with the exception of the Army Air Corps and the Signal Corps, most branches made little use of psychological devices in classification or selection. This relative inactivity in the field of military psychological prac-

tice was perhaps to be expected as a result of rapid demobilization and the maintenance of only a small peacetime force.

The period from 1918 to the outbreak of the present hostilities, however, saw the very rapid advance of scientific personnel procedures in American business, industry, and civilian government service. The new need, therefore, found psychologists and personnel technicians far better prepared to meet wartime demands of the armed forces than they had been in 1917. Many new devices had been developed both in testing and selection, and older tools had been widely applied and checked. There was available to the Army the services of a large group of men with both training and experience in the field of personnel work.

In the years immediately preceding the entry of the United States into the war, there was an increased interest in military personnel problems. In September 1939, when hostilities opened in Europe, the Division of Anthropology and Psychology of the National Research Council established the Emergency Committee in Psychology; and a month later the National Research Council set up, at the request of the Civil Aeronautics Authority, a Committee on Selection and Training of Aircraft Pilots, the membership of which included representatives of more than thirty universities.

The first step toward setting up a special agency to deal with test construction was taken in the spring of 1940 when a small Personnel Research Section was established in The Adjutant General's Office under the Plans and Training Officer, Brig. Gen. (then Major) H. C. Holdridge and his Executive Officer, Col. (then Captain) George R. Evans, who is now Chief of the Classification and Enlisted Replacement Branch. The staff of this small Section included Army Reserve officers with psychological training and several civilian specialists. A few months after the Section began work Dr. (now Major) Marion W. Richardson, at that time Examiner in Charge, Education and Psychology Unit, and Supervisor of Test Construction for the Civil Service Commission, was called in as consultant. Major Richardson is now Officer in Charge of the Personnel Research Section under Col. Evans.

Shortly after this agency was set up, the National Research Council was asked by Major General E. S. Adams, The Adjutant General, to appoint an advisory Committee on Classification of Military Personnel. Dr. Walter V. Bingham, who had been Executive Secretary of the 1917-1918 Committee on Classification of Personnel in the Army, was named Chairman. Other members

**ORGANIZATIONAL AND FUNCTIONAL CHART OF THE PERSONNEL  
RESEARCH SECTION, SHOWING PRESENT PERSONNEL\*\***

**COMMITTEE ON CLASSIFICATION OF MILITARY PERSONNEL**—Advisory to The Adjutant General  
  
Dr. Walter V. Bingham, Chairman

**COL. GEORGE R. EVANS, CHIEF  
CLASSIFICATION AND ENLISTED REPLACEMENT BRANCH  
THE ADJUTANT GENERAL'S OFFICE**

**PERSONNEL RESEARCH SECTION**  
Major M. W. Richardson, Officer in Charge  
Capt. Donald E. Baier, Assistant Officer in Charge  
  
Duties: The application of modern methods of psychological measurement to problems of selection, classification and assignment of personnel; the measurement of aptitudes and abilities, the standardization and evaluation of the effects of training and the evaluation of psychological traits and personality characteristics pertaining to the selection of men for special jobs; the analysis of military occupations and the determination of equivalence of civilian jobs and military jobs.

**TEST DEVELOPMENT AND ANALYSIS SUBSECTION**—Plans and develops tests to be used for the selection and classification of military personnel; conducts studies of reliability and validity of tests.

Dr. Clyde Coombs, Chief; 1 clerical worker.\*

**TEST DEVELOPMENT UNIT**—Studies the requirements of the field for which a test is to be developed; constructs suitable items; insures reliability and validity by necessary revision.

Dr. Louise Witmer, Chief; Lt. Clement Sievers,\* Mr. Kenneth Ashcraft, Mr. David Chesler, Mrs. Dorothea Ewers, Mr. Stanley Markey, Mr. Stanley Osgood; 1 clerical worker.

**STATISTICAL ANALYSIS UNIT**—Supervises the scoring of tests and the analysis of results, scales and calibrates tests; prepares scales, conversion tables and similar aids to interpretation and use of test results.

Dr. Reign H. Bittner, Chief; Lt. E. A. Rundquist,\* Dr. E. S. Bordin, Miss Jeanne Curtis, Miss Taamara Danish; 1 clerical worker.

**OCCUPATIONAL ANALYSIS SUBSECTION**—Analyzes civilian occupations useful for purposes of classification; analyzes military occupational plans on basis of common job sheets by which men with certain civilian training and experience may be assigned to proper military specialties; calculates and keeps correct data on occurrences and requirements for all military and civilian specialists; analyzes the organization and occupational composition of Tables of Organization for all arms and services.

Major Reuben Horchow, Officer in Charge, Capt. W. S. Studdiford, Lt. Forrest Forcum, Lt. R. S. Horelick; 10 clerical workers.

**FIELD STUDIES SUBSECTION**—Develops interview techniques, individual examinations, interest questionnaires, rating plans and other aids for use in appraising the qualifications of personnel; develops aids for selecting individuals for specialist training and for determining efficiency thereafter; provides consultant service to field installations and develops quantitative and objective techniques and devices for the solution of local and general problems of selection and classification of personnel; coordinates local research with view to avoiding duplication, installs service units in local posts and commands.

Major K. M. Dallenbach, Officer in Charge; Capt. Roger Bellows; Dr. Ray Faulkner, Chief; Mr. Earl Allgaier; Mr. Harold Bechtoldt; Dr. W. Schraeder; 1 clerical worker.

**TEST SERVICE SUBSECTION**—Provides the necessary services for the development and analysis of tests and other techniques and devices used for the selection and classification of military personnel.

Major H. C. Bingham, Officer in Charge (detailed to Field Studies Subsection).

**TEST SCORING AND RECORDS UNIT**—Distributes and maintains records of distribution of experimental classification supplies to field installations; scores all tests and makes item counts by hand and electrical scoring machine.

9 clerical workers.

**EDITING AND REPORTING UNIT**—Preparation and review of manuals, regulations memoranda, reports, and tests; responsible for the homogeneity of all publications, study and research of articles and matter for library and maintenance thereof.

Mrs. Ruth D. Churchill, Chief; Mr. Edwin Ziegfeld, Mr. Robert Iglehart; 5 clerical workers.

are Doctors C. C. Brigham, H. E. Garrett, L. L. Thurstone, L. J. O'Rourke, (Major) M. W. Richardson, and C. L. Shartle. This Committee met for the first time on May 24, 1940, to hear an outline of classification problems confronting the Service. Subsequent meetings were held in August and December of that year and in February and May of the year following; at the present time the Committee meets about twice annually.

During the summer of 1940 an Army Regulation (AR 615-25-*"Enlisted Men, Initial Classification"*) was drawn up by the Plans and Training Division under Gen. Holdridge and Col. Evans. This regulation established Army classification policy for the period of the present war and made provision for a complete testing program. The Personnel Research Section meanwhile constructed the first trial forms of what became known as the Army General Classification Test, or the GCT. Non-language tests were prepared for illiterate men or those whose language was other than English; and the first forms of the Mechanical and Clerical Aptitude Tests were devised.

The Secretary of War directed The Adjutant General, in June, 1940, to assume central authority for the classification of all men then in the Army, and all those who would enlist or be inducted in the future. By the time of the passage of the Selective Training and Service Act in September, the newly constructed tests were in process of validation and standardization, and by January of 1941 all those men who had been in the Regular Army or who had come in through the National Guard had been classified on the basis of the new procedures and tests.

The operation of the Selective Service Act presented new problems to those engaged in Army personnel classification. Four factors were principally responsible for this: (a) sudden influx of larger numbers of men, (b) increase in the range of mental ability and type of background of soldiers, (c) need for the selection of more officer candidates, and (d) need for rapidly and accurately

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\* Temporary duty.

\*\* Acknowledgment is made of the contributions of the following past members of the military and civilian staff of the Personnel Research Section: Capt. Sidney Adams; Major Harry Bues; Dr. Launor Carter; Dr. Alvin C. Eurich, Chief of Section; Mrs. Eleanor Gluck; Dr. T. W. Harrell, Chief of Section; Mr. Harold MacAdoo; Dr. Bronson Price; Dr. Robert Selover; Dr. Willis Schaefer; Mr. William Shanner; Mrs. Winifred Shepler; Miss Margaret Strong; Miss Helen Telford; Mrs. Lillian Troll; Mr. Howard Uphoff; Mrs. Florence Volkman; Dr. Carlton Wilder; Dr. Laurence Whisler.

determining degrees of skill and aptitude as a basis for special selection or training. These factors have combined to make more complex the work of the Classification and Enlisted Replacement Branch in general, and that of the Personnel Research Section in particular. Additional professional personnel has been obtained and reorganizations effected in order to meet the steadily growing demands of the various arms and services for tests to be used in selection problems. The staff of the Personnel Research Section has grown until it now includes 18 personnel technicians, 8 Army officers, and about 50 clerical workers. The accompanying organizational chart indicates the distribution of Section personnel and also the functions of the various Sub-Sections and units. The Classification and Enlisted Replacement Branch has five Sections, not shown on this chart, in addition to the Personnel Research Section. These Sections—Classification Procedures, Executive, Replacement Training, Requisition and Records, and Reception Center—formulate Army classification and assignment policies and administer the classification and assignment system in the field. These Sections base much of their work upon the use of the psychological devices developed by the Personnel Research Section.

The Section, through the Classification and Enlisted Replacement Branch, maintains liaison with the Army Ground Forces, Air Forces, and Services of Supply. The work of the Section is also coordinated formally or informally with that of other agencies engaged in related activities. Major Richardson serves as liaison officer to the Navy's Committee on Service Personnel. The Marine Corps has recently adopted for its own needs all the major features of the Army testing, classification, and assignment system. Close contact is maintained with the Army's Special Service Branch which, under Brigadier General F. H. Osborn, conducts studies on problems of morale, education of soldiers, and post-war rehabilitation and occupational placement. The studies of this Branch are particularly helpful as an index to the success of the classification system. Among civilian agencies which have given special assistance to the Section are the United States Civil Service Commission, the Maritime Commission, the National Research Council, and the United States Employment Service; the latter is at present contributing to the work of the Occupational Analysis Sub-Section in drawing up job specifications and equivalences.

When the Section was first established, there was an obvious need for an initial general classification test to supplant the old

Army Alpha and Beta tests, and additional general tests were found necessary as the program developed: the Non-Language, and Mechanical and Clerical Aptitude Tests. A fifth test used in general classification is the Radio Operator Aptitude Test, which the Section adapted in 1941 from a test previously constructed by the Signal Corps. Certain of these tests are administered at the Reception Centers to aid the classification officer in making an initial assignment; others are given later for special selection purposes. Revisions on all these tests are almost continually under consideration by the Section; the Statistical Analysis Unit maintains constant check on test results and their significance.

As the number of men to be dealt with increases, and as occupational specialization becomes more and more fundamental to military efficiency, objective methods of selection steadily supplant subjective judgments. The special selection programs of the various arms and services have required an increasing number of tests measuring specific achievement, aptitude, or knowledge. The selection of candidates for Officer Candidate School has called for the construction of a Higher Examination which would better differentiate between the abilities of men in Army grades I and II and for a special Officer Candidate Test. Tests for Warrant Officer candidates in each of approximately 30 specialties were drawn up in 1941. Considerable work has been done in the field of driver selection.

Requests for the development of these specialized types of tests come to the Section as a result of field work by the Army's classification officers. In addition to tests, the Section prepares other aids used by these men: manuals of test administration; a handbook for use by interviewers in their efforts to obtain a rapid and accurate picture of an enlistee's background and general qualifications. A Form for Interviewing and Ranking Candidates for Officer Candidate Schools is about to go into general use and is expected to aid in standardizing and making more objective this reinterviewing procedure. Also about to be issued is a Handbook of Personnel Tests dealing broadly with the principles of testing procedures, elementary statistics, and with those tests presently available for Army classification purposes.

## REORIENTATION IN PSYCHOLOGY COURSES

BY G. MILTON SMITH

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In an attempt to get some notion of the extent and character of current reorientations in psychology courses designed to further the war effort, the questionnaire here reproduced was sent in October to over thirty colleges and universities throughout the country. Although the lowering of the draft age to eighteen years makes the planning of curricula difficult, a summary of the returns early in November may be of some value.

Questionnaires or comments were returned from twenty-five institutions. In two cases no questionnaires were filled out because of the uncertainties of the future. On two of the questionnaires it was indicated that no reorientation was contemplated; although course offerings were designated, no further comment was made and no aims or topics were checked. On two others no reorientation was indicated, but items were checked where existing orientations were deemed helpful to the war effort. One reporter checked aims only. In other words, there were twenty-one questionnaires with aims checked and twenty with topics checked from: Brooklyn, Brown, California, Colgate, Duke, Harvard, Illinois, Lafayette, Lehigh, Minnesota, New York University, North Carolina, Northwestern, Ohio State, Rochester, Swarthmore, Tufts, University of California at Los Angeles, Wesleyan (Conn.), Wisconsin, and Yale.

The returns are summarized in the table. In general, as was anticipated, topics were merely checked with no indication of the number of hours devoted to each. The numbers in the present summary are frequencies (not hours), unless indicated as percentages. The instruction to check only one aim for each course was occasionally ignored, so that there is a slight overloading in some of the totals. The most popular "write-in" vote has been summarized in a somewhat arbitrary manner in the columns headed "Other Courses."\*

No reorientation is contemplated in 70 of the 188 courses checked. This leaves 63% in which some measure of reorientation

\* The omission from the original questionnaire of courses in Personnel, Industrial, Vocational, Employment, and Applied Psychology is not an indication of a similar attitude; this was partly oversight and partly dictated by limitations of time and space.

Courses in military psychology are being offered in only three cases. Apparently more stress is placed on general orientation and background than on teaching specific techniques deemed useful in military life. If we eliminate psychometrics and the personnel group of courses from this summary, the emphasis on general background training becomes very marked: the checks on Aim 3 rise from 27% to 36%, and those on Aim 2 drop from 18% to 9%.

### Suggestions for the Reorientation of Psychology Courses So As To Further The War Effort

[illegible]

\* Captions marked with asterisk did not appear in original questionnaire.

<sup>1</sup> Pennington and Case, *Psychol. Bull.*, 39, 377f.

## QUESTIONNAIRE AND SUMMARY OF TOPIC CHECKS\*

Courses	Military	General	Abnormal	Clinical	Educational	Experimental	Physiological	Psychometrics	Social	Statistics	Other Courses		Total by Topics*	Per Cent of Grand Total*
											Personnel, Industrial* Vocational, Employment	Applied*		
TOPIC (enter hours or check)	Frequency of Topic Checks*													
1. Selection (Job Placement)														
a. Intelligence tests		6		5	3	2		4	9	2	1	5	3	13
b. Special abilities tests		5		5	3	3	1	7	1	1		5	4	36
c. Personality inventories		4	2	5	3	1		3	2			6	3	34
d. Statistical techniques for:												3	4	27
(1) test analysis		3		3	3	1		9	1	5		3		28
(2) test construction		1		3	3	1		9	2	4		3		26
e. Interviewing		1	1	5	1			3	1			6	3	21
Total by Courses*		20	3	26	16	8	1	44	9	10		31	17	185 29%
Per Cent of Total Checks for Topic 1*				14%				24%				17%		
2. Efficiency		1				1	1	1				2	4	10
a. Optimum environmental conditions for mental and motor work		6			2	2	3					6	4	23
b. Control of boredom and fatigue		2			2	1	2					5	2	14
c. Use and abuse of drugs		4	3				3					3	1	14
d. Diet and efficiency		2	1				3					2		8
Total by Courses*		15	4		4	4	12	1				18	11	69 11%
Per Cent of Total Checks for Topic 2*		22%										26%		
3. Perceptual Problems		4	1		1	2	1							9
a. Factors affecting accuracy of visual perception		8	1	1	1	12	3					3	1	30
b. Special problems of dark adaptation under conditions of night flight, black-out, etc.		2				5	6					1	2	16
c. Localization of sound		3			1	8						1	1	14
d. Camouflage		3			1	9	1		1			1	2	18
Total by Courses*		20	2	1	4	36	11	0	1	0		6	6	87 14%
Per Cent of Total Checks for Topic 3*		23%				41%								
4. Personality Adjustment in Military Life		1	2	1					5			1		10
a. Personality inventories and other indices of incipient neuroses		1	6	4				3	2			1	2	19
b. Syndromes common in war neuroses		2	13	5			1		2				2	25
c. Adjustment to routine, discipline, absence from home, military stresses		1	4	1					2			1	1	10
d. Preventive measures		1	5	3								1	1	11
Total by Courses*		6	30	14			1	3	11			4	6	75 12%
Per Cent of Total Checks for Topic 4*			40%	19%										

\* Captions marked with asterisk did not appear in original questionnaire.

## QUESTIONNAIRE AND SUMMARY OF TOPIC CHECKS\*—Continued

Courses	Military	General	Abnormal	Clinical	Educational	Experimental	Physiological	Psychometrics	Social	Statistics	Other Courses		Total by Topics*	Per Cent of Grand Total*
											Personnel, Industrial* Vocational, Employment	Applied*		
5. Leadership		3			1				6		3	1	14	
a. Traits contributing to effective leadership		1			2				8	1	2	1	15	
b. Maintenance of discipline		1		1	2				8		3	1	15	
c. Maintenance of morale		2	1	1	2				8		1	1	18	
Total by Courses*		7	1	2	8				30	1	9	4	62	10%
Per Cent of Total Checks for Topic 5*									48%		15%			
6. Wartime Psychological Problems in Civilian Populations		1						1	1		2	1	5	
a. Measurement of public opinion		3						10	12	1	1	1	17	
b. Maintenance of morale		2			2			12			2	1	19	
c. Special problems of children exposed to air raids		1	2	2	2			4					11	
d. War neuroses		2	6	3				2				1	14	
e. Social tensions in defense boom areas								5		1			6	
f. Special morale problems of indigenous minority groups			1		1			10		1	1	1	14	
g. Refugee problems					1			1		1			3	
h. Problems of civilian defense								3		1			4	
i. Effects of rationing and other restrictions on morale								3		1			4	
j. Impact of war on family, courtship and marriage		1			1			8		1			11	
k. Impact of war on the church								1					1	
l. Impact of war on schools and colleges					2			2			1		5	
Total by Courses*		10	9	5	9	0	0	1	62	1	12	5	114	18%
Per Cent of Total Checks for Topic 6*									54%		11%			
7. War Propaganda		3	1						14			2	20	3%
8. Learning techniques applied to learning code, regulations, etc.		3			3	5					1	1	13	2%
9. Psychological problems in military control of conquered populations			2						3			1	6	1%
Grand Total of Topic Checks*													631	100%

\* Captions marked with asterisk did not appear in original questionnaire.

total of 631 topics and sub-topics checked, 29% were under Selection, 18% under Wartime Psychological Problems in Civilian Populations, 14% under Perceptual Problems, 12% under Personality Adjustment in Military Life, 11% under Efficiency, and 10% under Leadership. Topics 7, 8, and 9 received only 3%, 2%, and 1% respectively of the total checks. Doubtless the meager

returns for these last three topics are due in part to their position at the end of the questionnaire and to the absence of suggested sub-topics. The summary by courses indicates that *Selection* is to be most heavily stressed in psychometrics, the personnel group of courses, and in clinical psychology, which received 24%, 17%, and 14% of the total checks for this topic respectively. *Wartime Psychological Problems in Civilian Populations*, as might have been anticipated, will receive its greatest emphasis in social psychology, where 54% of the checks occurred. *Perceptual Problems* will be most heavily stressed in experimental and general psychology; 41% of the checks were assigned to experimental and 23% to general. *Personality Adjustment in Military Life* is to be most heavily emphasized in the abnormal and clinical courses, as might have been expected, where the percentages are 26 and 22, respectively. Social psychology will be the focal point for the topic of *Leadership*; 48% of the checks were assigned to this course.

The original questionnaire provided blanks for writing in other aims and sub-topics. Some of the aims mentioned were: "to provide concepts and techniques essential to sympathetic cooperation with programs actually operative and valued, and contributing to the war and post-war effort"; "to provide orientation to instruments being used in military selection"; "to provide training for military psychologists, research, and personnel technicians, with emphasis on research in psychophysiology, especially that involved in aviation"; "to provide training for psychiatric aides, psychiatric nurses, and psychometricians"; and "to provide for the accomplishment of specific research jobs."

Topics written in included:

Under *Selection*: "job analysis" (three times), "adjustmental capacity," "clinical demonstrations," "officer selection," "application blanks," "training problems," "qualitative tests of conceptual activities," "projection and Lewinian techniques," "military classification systems" (two times), "validity checks," and "interest questionnaires."

Under *Efficiency*: "morale in industry," "incentives," "control of fear," "time and motion studies," and "measuring emotional activity."

Under *Perceptual Problems*: "speed of accommodation," "stereoscopy," "visual motor performance," and "effects of intense tones."

Under *Personality Adjustments in Military Life*: "general mental hygiene."

Under *Leadership*: "tests of leadership," "selection of leaders," "understanding people," and "situations which make effective leadership possible."

Under *Wartime Psychological Problems in Civilian Populations*: "rumor," "race prejudice," and "panic and mob behavior."

## A CONFERENCE ON DOMESTIC PROBLEMS OF A DEMOCRACY AT WAR

BY HELEN PEAK

*Randolph-Macon Woman's College*

All college committees on war activities meet with the recurrent necessity of educating the college community on questions vital to the successful functioning of a democracy in wartime. Since this process obviously involves many practical problems of a psychological nature, a project carried out at Randolph-Macon Woman's College may be of interest to psychologists. Unfortunately we cannot offer objective measures of attitude change in connection with this project, although such a situation would be an interesting one in which to make such measurements.

It had been the experience of our War Activities Committee that individual speakers brought to the campus often elicited interest on the part of students but that after a few days the enthusiasm vanished, leaving little evidence of a permanent effect. In the spring tentative plans were laid for a conference in which maximum opportunity for general participation was the goal. At an early fall meeting of the faculty a vote was taken on the proposal that on October 30 and 31 a conference should be held on *Domestic Problems of a Democracy at War*, and that classes be dismissed for the occasion. This proposal had been discussed at a meeting late in the spring. At the same time the matter was again brought before the student body both in the columns of the college paper and by means of speeches and a question panel at college assembly periods. *Letters to the Editor* were solicited and the matter was thoroughly thrashed out. The faculty passed the motion unanimously, and the student body agreed by a large majority to support the Conference and forego all social engagements for the two days of meetings.

Soon after this a number of different groups went to work to interest members of the college community in particular topics to be discussed. This was done by various methods. Again the college newspaper was used to report on the progress of plans and the development of details. Editorials were written and interviews were held with various leaders of the student body about their opinions of the conference. An extra-curricular Poster-making course prepared a series of posters dealing with conference topics, and the Library staff provided both bibliographies and

excellent exhibits of books on each of the general subjects. Two weeks prior to the conference, twenty-five students and twenty-five faculty members were chosen as discussion group leaders. These individuals were given special copies of the bibliographies and by a sort of infiltration process undoubtedly played a big part in increasing interest in the plans. It was part of the function of these leaders to encourage students to frame questions to be presented to the question panels, and boxes were placed in each of the residence halls to receive such questions.

The conference topics were divided into four main groups: *the Psychological Front—Morale; the Economic Front; Physical Fitness in Wartime; and Careers for the Crisis*. Under the heading of the *Psychological Front* consideration was given to war aims and morale, to a general discussion of factors involved in civilian morale, to problems of censorship and to certain lines of cleavage in national unity. This last topic involved the discussion of racial and national minorities and of labor-management problems. Under the heading of the *Economic Front*, control of inflation, rationing, and other consumer's problems came up for discussion. Sessions were held morning, afternoon, and evening for two days, and each session consisted of two addresses of about thirty minutes each, followed by a question panel which lasted for one hour. Some questions had been submitted in advance, and additional questions were written out during the meeting and passed to ushers who delivered the questions to a committee, which eliminated vague questions and those which had already been answered by the speakers. It seemed that a much greater number of thoughtful questions were secured by this method than by the usual procedure of entertaining questions from the floor. Once on each of the two days the large group was broken down into small discussion groups of about twenty-five each, with a student and a faculty member in charge.

Apparently the conference was effective in stimulating a continued interest on the part of the student body. There has been, for example, the spontaneous request from a number of the discussion groups that they be permitted to continue intact for further work; and for the first time the College has been able to elicit some interest in a college forum to be held at regular intervals.

## PSYCHOLOGY AND THE WAR: NOTES

*The teacher's responsibility in time of war.* A pamphlet on this topic has been prepared by Dr. Ralph G. Ojemann of the Iowa Child Welfare Station and others, in order to acquaint teachers with children's mental hygiene problems created by the war, and to suggest procedures by which teachers can help the child to meet these difficulties. The bulletin considers a variety of conditions that may affect the child mentally and emotionally. The absence of a beloved brother or father, called from home for military duty or industrial service elsewhere; restriction of living conditions and play-space in crowded war plant areas; repeated emphases on war in radio, newspaper and motion picture experiences; and the departure of mother from the home to the factory—all may have disturbing effects on the child's growth.

To protect the child from fear, insecurities and other forms of mental strain produced by such changes in the child's environment, seven rather concrete suggestions are given. These are based on fundamental research in child development, but are couched in simple language and in terms that can be applied in practically every community. They relate to methods for learning about the conditions in the individual community where the teacher is working; studying each child as an individual; helping the child to find clear and simple answers to his questions; appraising war activities for children in terms of the fundamental effects on development; and conducting class discussion in ways conducive to mental health. The final suggestion relates to the teacher's own mental health.

*Vacated positions.* In the current movement of psychological personnel from civilian to non-civilian appointments and the consequent changes of position in the civilian field, the Office of Psychological Personnel should be of maximum assistance to individual psychologists and the profession at large. This means that the interests of appointing agencies should also be considered. Many of these agencies are finding difficulty in obtaining suitable replacements. In some instances this difficulty is either so real or presumptive that important vacated positions are being lost or likely to be lost to the profession. After the war it may be difficult to reestablish these positions.

It is suggested that all psychologists vacating their present positions for other appointments advise the Office of Psychological Personnel of such changes. The OPP will then be in a position to be of larger assistance both to psychologists and the employers of psychologists. In this way it is probable that the welfare of both appointing agencies and appointee will be served to better advantage, and the continuation of appointments previously established can more readily be continued into the future. Such information will have the additional advantage of making it possible for the OPP to keep psychologists in touch with each other and with the appointment developments in the field as a whole. Communications should be sent to the Office of Psychological Personnel, 2101 Constitution Ave., Washington, D. C.

## BOOK REVIEWS

KLOPPER, BRUNO, PH.D., and KELLEY, DOUGLAS M., M.D. (Introduction by Nolan D. C. Lewis). *The Rorschach technique: A manual for a projective method of personality diagnosis*. Yonkers, New York: World Book Co., 1942. Pp. x+436.

The bulk of this book (308 out of the 405 pages) is Doctor Bruno Klopfer's exposition of the Rorschach test as he has been teaching it. These pages offer therefore that author's latest and most complete description of his technique. However, judged from the point-of-view of a student brought up within the Rorschach-Oberholzer discipline, Doctor Klopfer has superimposed on the Rorschach terrain so much that is strange to it as to make it, except for the broad features, essentially unrecognizable. Taken together with certain new emphasis in interpretation, he has made of the test another instrument.

The first, and most obvious transformation, is in respect to the great multiplicity of symbols. In the "detail" category, (responses to parts of the ink-blot figure), Rorschach's two classifications, D, Dd, have become six: D, d, dd, de, di, dr. This is not to mention such inventions as D-S; or DS (apparently not identical with Rorschach's Dzw, the usual white space response). The variegation becomes even more astounding in respect to movement and color and shading responses. In these categories, Rorschach was able to handle the material of his test with the simple M, C, CF, FC, and F(C) (translating his German letters) or five symbols. The Klopfer repertory is M, FM, m, mF, Fm, k, kF, Fk, K, KF, FK, Fc, c, cF, FC', C'F, C', F/C, C/F, C, Cn, Cdes, Csym. Actually, these Klopfer symbols are the short-hand for certain kinds of responses that have been observed by various workers and commented upon. As precisely identifiable refinements, they are, however, too rare to warrant separate classificatory rubrics. They are those qualitative events which may overlay any Rorschach response record, and help fill out the diagnostic picture. There is no objection, of course, to designating them by special signs. The practice leads however to a fallacious method insofar as these symbols become part of the response summary, where in turn, they become part of a formula, e.g.,  $(Fm+m):(Fc+c+C')$ . Or, (p. 229), "there are several ways of measuring the degree of outer control with the aid of the quantitative Rorschach results" and several ratios are offered as:  $FC:(CF+C):(FC+CF+C)$  to  $(Fc+c+C')$ , whereby to gauge "outer control," "inner control," "crude control," "refined control," "extreme constriction," "modified constriction," and others. Here is given an impression of quantitative foundation, which simply does not obtain for the psychologic events in question. The few formulas which Rorschach, and his followers use, are not intended as any representation of exactly measured events. They are short-hand indicators of the directions of psychic trends, not measurements.

Deriving from this procedure is a second more serious weakness. The offering of many symbols and formulas steers the examiner into the search for them. It thus encourages that superficial amateur psychologism which has been so much the bane of psychometrics; happily less so today than

twenty years ago. It takes the student away from observation of behavior, and becomes a hunt for signs and for the magic of numbers. To make the symbols so large a portion of Rorschach test procedure is to lay the emphasis on sign at the expense of substance.

This misplaced emphasis in turn leads to a third, and by far most fundamental, criticism. Doctor Klopfer informs us in his first sentence that the "book grew out of seven years of *learning by teaching*." He makes no statement of having first set his own foundation in study with any of the men who had developed the test structure from its beginnings up. Oberholzer is of course the most important of these. That is, Klopfer started his Rorschach work *de novo*, and the results show it. Thus, the fundamental error in regard to the all-important M, or movement (Rorschach's B, or *Bewegung*) response, and particularly respecting movement in animal forms (114). A single session with Oberholzer would have disabused Doctor Klopfer of the thought that "the open mouth of a crocodile . . . devouring its victim" (115-116) has any M in the Rorschach sense. Similarly the "movement" in inanimate objects,—*"something falling apart"* (117). The extreme to which this distortion of M may go is finding it in "animal skin, nailed on a board . . . it is beginning to contract" (119).

The M response, in the Rorschach test, is something the individual does; it is of deep significance to him; and it is something other than what he states in the manifest content of the association. This potency of M is what makes it so important a discovery and Rorschach's great contribution to the problem of objective ingress into deep personality layers. Accuracy in identifying it, therefore, is of greatest importance. It makes the difference between the psychologist trained to search for sub-surface mental activity; and a "sign psychology."

The merits of the Klopfer portions of the book are in respect to valuable suggestions for further exploration. One of his best is that which he calls "Testing the Limits." In this he is making a regular rule of procedure out of a practice that had formerly been employed only in those patients who had been extremely uncommunicative. He devotes more space than have former publications,—excepting, naturally, Binder's full monograph—to the shading response, and makes some valuable suggestion (236) as to possible significance of the different shading nuances.

Beginners will be grateful for the considerable more space given to administration and recording than have earlier publications. The scoring blank (Klopfer and Davidson), which forms a formal element in Klopfer's method with the test, is pasted into the book. The author closes (Appendix to Part III) with one sample Rorschach record, scored and interpreted. In this reviewer's opinion, teaching is best done by an abundance of illustrative material.

The chapter on history includes some hitherto unpublished and valuable details. Regrettable omissions are the names of Campbell and Wells, in Boston, who were largely responsible for the early research progress of the test in this country; the American Orthopsychiatric Association, before which the first American reports were made; and Lawson Lowrey, whose persistent interest made possible much of the earlier American publications.

The final eight chapters of the book are Doctor Douglas Kelley's contribution. They summarize, as well as evaluate, the investigations, with

the test, in the following clinical conditions: intracranial organic pathology, dementia praecox, mental deficiency, convulsive states, psychoneuroses, depressive states, with one chapter concerning miscellaneous clinical problems (excitements, alcohol, drugs, *inter alia*). The best of these chapters are those on brain pathology, and schizophrenia, which is to be expected, these being the fields which have been most studied. The least satisfying is that on psychoneuroses. This is not Doctor Kelley's fault being due to the paucity of published reports on the Rorschach test in neurosis. Taken by and large the Kelley chapters are much the most satisfying in the book.

The book has a good bibliography, 370 titles, covering the literature through January, 1942. It is well indexed and paginated, an important feature in any instruction manual. The introduction is appropriately by Doctor Nolan D. C. Lewis, one of the men whose support, material and moral, has done much towards developing the test in America.

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SHELDON, W. H. (with the collaboration of Stevens, S. S.) *The varieties of temperament: A psychology of constitutional differences.* New York: Harper, 1942. Pp. x+520.

In a preceding volume, entitled *The varieties of human physique* (Harper, 1940), Sheldon outlined a system for the classification of human bodily structure in reference to three variables: endomorphy, or the predominance of the digestive viscera, derived from the endodermal embryonic layer; mesomorphy, or the predominance of somatic structures such as bone, muscle, and connective tissue, derived from the mesodermal layer; and ectomorphy, or fragility and linearity, with a predominance of skin and nervous system, which are derived from the ectodermal embryonic layer. Each individual is classified on a scale of 1 to 7 in reference to each of these three categories.

In the present volume a similar three-variable schema is developed for the classification of temperamental characteristics, and certain relationships are demonstrated between morphologic and temperamental categories. The three temperamental components are designated viscerotonia, somatotonia, and cerebrotonia. The first of these, viscerotonia, is characterized in its extreme manifestations by "general relaxation, love of comfort, sociability, conviviality, gluttony for food, for people, and for affection" (10). Somatotonia is marked by "a predominance of muscular activity and of vigorous bodily assertiveness," the individual showing "vigor and push." In cerebrotonia, "attentional consciousness," "restraint, inhibition, and the desire for concealment" predominate, the individual shrinking from social contacts and repressing somatic and visceral expression.

In arriving at this three-fold schema, Sheldon first collected a list of 650 alleged temperamental "traits," most of which were related to introversion-extroversion. After adding a few from his own observations, arranging and condensing, the list was reduced to fifty terms which

seemed to embody all the essential ideas found in the original list. These fifty traits were incorporated into a five-point rating scale, which was later expanded to a seven-point scale. In what the author characterizes as "the initial experiment," this preliminary scale was employed in the rating of 33 male graduate students, instructors, and other academic people on the basis of twenty interviews conducted by the author and supplemented by everyday observations covering one year. In the course of these interviews, a number of the traits were redefined and clarified. All 1,225 intercorrelations among the ratings on these fifty traits were computed. Sheldon reports that from an inspection of this correlation table it appeared to him that the traits fell into three clusters. On the strength of this inspectional analysis, he proceeded to include in each cluster those traits which yielded positive correlations of .60 or more with other traits in the cluster and negative correlations of .30 or more with every trait in each of the other two clusters. By this method, twenty-two traits were selected. In the course of subsequent studies on more subjects, the author sought to "redefine and sharpen" the initial twenty-two traits and to add others which also satisfied the above correlational criterion. The final scale developed by this technique consists of sixty traits, twenty in each cluster.

In describing the procedure to be followed in using the scale, Sheldon recommends that the subject be observed closely for at least one year. During this period, the examiner conducts a series of at least twenty one-hour interviews, using primarily "guided discussion" and "systematic questioning," although free association and dream analysis may also be needed in difficult cases. The interviews cover physical and health history, genetic and family history, economic, social, sexual, educational, and aesthetic history, characteristic tastes and habits, and such special clinical matters as the individual case may indicate. On the basis of all this information, the subject is rated for each of the sixty traits on a seven-point scale. The sum of the ratings on the twenty traits within each cluster is found and is then itself transmuted into a seven-point scale, indicating the relative degree of viscerotonia, somatotonia, and cerebrotonia, respectively, in the subject's temperamental make-up. Thus an extreme cerebrotonic would be characterized as 1-1-7, a uniformly moderate individual as 4-4-4.

In the effort to make the technique more practical, Sheldon experimented with a "short form" scale, composed of thirty relatively objective traits selected from the original list, all of which could be rated after a single one-hour interview. Correlations between this form and the long form administered to 200 cases were found to be +.73 for viscerotonia, +.61 for somatotonia, and +.68 for cerebrotonia. In a still later "twenty-minute" form, the subject is asked to participate in certain standard diagnostic activities and is then rated by the examiner on any of the sixty traits which the latter feels confident to judge. In a group of fifty subjects, this form yielded somewhat higher correlations with the long form: +.82 for viscerotonia, +.84 for somatotonia, and +.91 for cerebrotonia.

Detailed life histories, as well as scale ratings of six young college men are reported in order to illustrate the use of the long form of the scale and to help clarify criteria for the recognition of the extreme temperament

variants. Possible therapeutic measures for these cases are also discussed.

The most extensive survey reported in the book was conducted on 200 university men between the ages of 17 and 31, all of whom were observed by the author over a five-year period. Each subject was given morphological and temperamental ratings, as well as a classification in terms of general "achievement and adjustment." Detailed comparisons are made between temperamental and morphological variables and between both of these and the "achievement" classification. In reference to separate components, a correlation of  $+0.79$  was found between endomorphy and viscerotonia,  $+0.82$  between mesomorphy and somatotonia, and  $+0.83$  between ectomorphy and cerebrotonia. The author repeatedly emphasizes, however, the need for considering total individual patterns of morphological and temperamental ratings, rather than isolated variables, and points especially to discrepancies between somatotype and temperamental index as frequent concomitants of maladjustment and low achievement level.

The most serious limitation of Sheldon's investigation arises from the fact that the entire structure of evidence stands or falls with the "initial experiment." Owing to the criterion employed for the subsequent inclusion of traits within the scale, all further results obtained on larger samples can be no more conclusive regarding the existence of three "primary components" of temperament than is the initial experiment itself. In anticipation of some of the criticisms of his work, Sheldon attempts to meet this difficulty by affirming, "We did not start with the three components. These were arrived at empirically" (402). To be sure, they were arrived at empirically, but this empirical procedure consisted of an inspectional analysis of a table of 1,225 correlations computed from ratings of only 33 highly selected subjects by one observer. Thus it is not the lack of empirical procedure, but the inadequacy of the particular procedure employed by Sheldon, to which the reviewer would call attention.

Although Sheldon uses the term "primary component" freely throughout the book, no technique of factorial analysis was actually employed. On page 10 the author reports that "a variation on the technique of factor analysis" was used. This "variation" was apparently developed with a certain measure of artistic license. The inspectional method of analyzing inter-correlations is quite subjective at best, but when applied to a table of 1,225 intercorrelations it assumes the nature of divine inspiration. The author's comments on page 16 are perhaps symptomatic of his attitude towards such matters. He writes: "The tedious element of the job did not lie in hunting and defining traits, nor in hunting subjects to be rated. The latter was more like a pleasant game—like what bug-hunting is to the entomologist. The pain lay in the statistical analysis of the large masses of data that accumulated."

In discussing the possible influence of halo effect upon his results, Sheldon calls attention to its unavoidable presence in all observations and mentions as the strongest defense against it the fact that the experimenter was aware of its nature and therefore on guard against it. He adds further that in the case of at least one correlation, that between mesomorphy and somatotonia, the halo effect actually operated in reverse, lowering the apparent relationship, since many mesomorphs show a "superficial

serenity" and it is only after detailed analysis of the life history that the latent somatotonia is discovered. This argument could, however, be turned against itself. It is possible that the first impression was more nearly correct in such cases and that the experimenter's mental set predisposed him to seek details which might corroborate his hypothesis until some were found. The halo effect may have operated in two ways in Sheldon's investigation, *viz*: (1) to raise the apparent correlations between somatotype and temperamental index; and (2) to increase the frequency of expected relationships between "achievement ratings" on the one hand and both morphological and temperamental ratings on the other, as in the finding that inconsistencies between somatotype and temperamental index tended to be associated with maladjustment.

In the effort to check on the reliability and validity of the temperament scale, Sheldon re-interviewed 83 of the 200 cases used in the major study after a period of one year. The correlations between the two sets of ratings was  $+.96$ , but the author admits that memory played a part in raising the correlations spuriously. A further test was conducted with 21 graduate students of both sexes, who rated each other during "double interviews" and were also rated by the experimenter on the short scale. The correlations of the ratings given by each subject to his 20 classmates with those given by the experimenter to the same persons ranged from  $+.17$  to  $+.94$ . The author calls attention to the high correlations obtained by some of the raters. Apparently in this study, however, the experimenter's ratings were employed as a criterion, since in a later reference to the same experiment (422) Sheldon writes that this experiment "raises a question as to whether more than a relatively small proportion of a population of graduate students possess the qualifications necessary to do this kind of work." As a check on either validity or reliability of the scale, this procedure appears somewhat circular.

The theoretical schema proposed by Sheldon is undoubtedly more promising than earlier typological theories. With the Temperamental Index, individuals are classified along a continuous scale which simply substitutes a three-dimensional for a one-dimensional variable pattern. This fact, considered together with the mass of detailed information collected on 200 cases, makes it all the more regrettable that the investigation was not so designed as to furnish a more conclusive test of the theory. It is to be hoped that further research will supply this lack.

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MORGAN, JOHN J. B. *Child psychology* (3rd ed.) New York: Farrar & Rinehart, 1942. Pp. xvii+588.

This, the third edition of Morgan's *Child psychology*, when compared with the first edition published eleven years ago, reflects strikingly the changes which have taken place in the field during the last decade. Whereas the first edition was largely an exposition of precepts derived from clinical experience, the present one makes extensive use of experimental data and incorporates hypotheses which have been developed through researches in various areas of child psychology. Morgan now

emphasizes the developmental processes as brought out in longitudinal studies of the same children, the importance of interrelationships among the diverse developing processes in the child, field theories of motivation, and so on. This change in emphasis is evidenced in the changes in the make-up of the book which is increased in length by over 100 pages in order to take account of new material. Although the total number of chapters is the same, chapters on "Prenatal Development" and "Physical Growth" replace old ones on "The Child's Adjustment to the Family" and "Imagination"—the latter two subjects being handled in other chapters which have been to some extent re-named and rearranged. Where in the first edition there were about four references for collateral reading at the end of each chapter, in the new edition the end-of-chapter references average about thirty, most of which are reports of recent research.

The new chapter on prenatal development seems to the reviewer to be excellent. Much of the recent research on animal fetal development has been integrated in such a way as to show the significance of maturational processes, and these have been related to human fetal and post-natal development.

Although the inclusion of a chapter on physical growth is a good idea, the chapter as written suffers from what is probably the author's lack of familiarity with the subject. In the reviewer's opinion, for example, it would have been better to omit the six pages of tables on weight-height-age diagnosis and on prediction of adult height. The Baldwin-Wood weight-height-age tables which Morgan uses are very old and have been shown to be inadequate. Furthermore, both sets of tables serve only to make the student forget the importance of individual differences in body build and rates of physical maturing—differences which are mentioned but whose psychological implications are not followed through.

As for Morgan's use of recent research in child psychology, it is, in general, good on an elementary and superficial level. This text should prove valuable for an elementary course, especially as the experimental and theoretical data are very well utilized in pointing out practical applications, in explaining familiar problems in child behavior, and as guides for teaching children and for developing in them desirable emotional habits and attitudes.

NANCY BAYLEY.

*Institute of Child Welfare,  
University of California.*

LUNDBERG, GEORGE A. *Social research* (2nd Ed.). New York: Longmans, Green, 1942. Pp. xx+426.

This is a book on research methodology written by a sociologist primarily for students of sociology. Perhaps its potential usefulness for psychologists can, in part, be judged on the basis of a listing of some of the topics discussed: difficulties of objective observation, experimental techniques, terminology, units, classification, sampling, the schedule, questionnaires, sociometric scales, measurement of attitude and opinion, methods in ecology and interpersonal relations, interviewing, social survey and social bookkeeping. It is thus seen that this volume contains

much which is of concern to the social psychologist, but it does not follow that those beyond the elementary graduate level will find its reading worth the effort.

Those who share the reviewer's bias in favor of conciseness, or prejudice against verbosity, will no doubt agree that as much could have been said in half the pages. Despite the reviewer's interest in methodology, he had great difficulty in maintaining alertness when reading this volume. Whether this was due to the author's style, or to the plentiful illustrations, or to a very liberal use of quotations, or to seeming repetitions, cannot be answered. Perhaps the very things to which we object constitute the merits of the book for the college senior.

But even the senior student may be left wondering about the differences between the "schedule," the "questionnaire," and the "sociometric scale" despite (or maybe because of) the fact that a separate chapter is devoted to each. Nor will the senior suspect that one of the logical outcomes of "exact control" by rigorous matching of cases, as advocated in the quotation from Chapin (67-73) is the capitalization of the ever present errors of observation in the matching variables. It is also to be hoped that the senior will overlook the following: the erroneous use on page 146 of the ordinary formula for the probable error of the mean in an illustration which involves sampling from a finite universe of 100 men; the illogical statement on page 117 that "the chances are two out of three that the true proportion . . ."; the proposition on page 148 that "all the data in a universe from which the sample is drawn may have a bias . . ."; and the advocacy of testing the representativeness of a sample by taking several other samples of about the same size.

It does not follow from the reviewer's reactions that the volume under consideration will not prove itself a useful and critical compendium of current methods and instruments of research in sociology. The selected list of suggested readings at the close of each chapter should be useful to students who wish to go beyond the chapter discussions.

QUINN MCNEMAR

*Social Science Research Council*

## NOTES AND NEWS

HAROLD B. BERGEN, instructor in industrial relations at New York University, and a partner in McKinsey and Co., of New York City, died November 4, 1942.

CHARLES DURWARD DONALDSON, head of the department of psychology, State Teachers College (Eau Claire, Wisc.), succumbed to a heart attack, November 25, at the age of sixty-nine years. Professor DONALDSON had been a member of the college staff since 1921.

GEORGE BASIL RANDELS, professor of philosophy and head of the department of philosophy and psychology, Alma (Mich.) College, succumbed to a heart attack, November 26, at the age of sixty-six years.

WALLACE H. WULFECK, formerly associate director of marketing research at the Psychological Corporation of New York, has been appointed director of research for the Federal Advertising Agency of New York.

THEODORE A. JACKSON, on leave of absence from the psychology department at Columbia University, has accepted a position in the department of psychology at Indiana University with the rank of assistant professor. He is also Director of the Psychological Clinic.

W. A. KERR, of the RCA Manufacturing Company, Indianapolis, has been elected chairman of the Psychology Section of the Indiana Academy of Science for 1943.

GWENDOLEN G. SCHNEIDLER, counselor in the Testing Bureau of the University of Minnesota, has been commissioned as a Lt. (j.g.) in the WAVES. VICTOR RAINY of the Ohio Bureau of Juvenile Research has been appointed in her place.

WILLIAM J. SCARBOROUGH, has been appointed assistant professor of psychology at Cornell College (Mount Vernon, Iowa).

Among the nearly 200 members of the faculties of Columbia University who have been granted leaves of absences are: GOODWIN WATSON, ARTHUR I. GATES, ROBERT L. THORNDIKE, and RALPH B. SPENCE.

The RCA Manufacturing Company has established a department for personnel planning and research with FORREST H. KIRKPATRICK, on leave of absence from Bethany College, in charge.

JOHN M. FLETCHER, until his retirement four years ago, professor and head of the department of psychology at Tulane University, has been recalled to duty by the university to take the place of a faculty member on leave with the Army.

City College (New York) has announced that JOHN GRAY PEATMAN, of the department of psychology has been promoted to associate professor and that ARTHUR H. SUTHERLAND, of the department of education has been promoted to assistant professor.

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